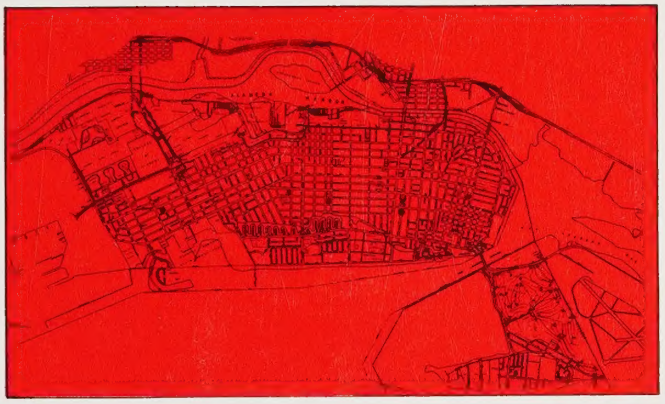

Combined Land Use Plan

Land Use, Open Space and Circulation
Alameda, California

City of Alameda

Combined Land Use Plan

Land Use, Open Space and Circulation

Prepared by the City of Alameda Planning Department

Adopted July 3, 1979

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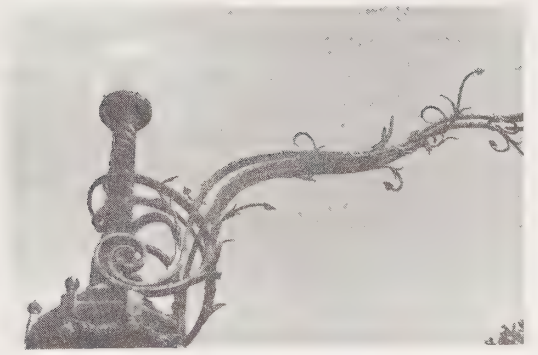


Introduction

The elements of the General Plan provide the framework for the future character and quality of development of the City. The interrelationship of the Land Use, Open Space and Circulation Elements is especially critical. Land uses determine settlement patterns and population, how much traffic is generated by that population and how much open space is needed. Open space is a major land use which shapes and defines land use patterns and preserves land for recreation, conservation of natural resources, and other public uses. The capacity of the circulation system, in turn, limits the types of land uses which can be developed. These three elements were combined in this document so that they could be worked on together in order to reinforce each other in molding a physical environment consistent with the goals of the community's citizens.

A general plan is just that, general. It is a flexible document of policies for the physical development of the City over the long range. A twenty year time frame is assumed. However, the general plan is subject to yearly review. It is intended that this Combined Land Use Plan be continually updated and revised in order to maintain its usefulness and relevance as a planning tool.

Alameda's Strengths

Much of this plan focuses on problems and recommends solutions. However, the plan recognizes Alameda's strengths and how to encourage them. Alameda is fortunate to have a small town character, established older neighborhoods, and a rare status as an island city that gives it a very strong physical form.

Old Town Character

Alameda has the physical form of an older town. Streets are laid out on a grid pattern. Most are residential and geared to a low volume movement of vehicles. The house lot is different from those found in newer suburbs. It is most often narrower and deeper, with a small front yard but a large back yard. Unlike the suburban pattern where each house is evenly set back from the street, there is a wide variety of setbacks in Alameda. Some garages and fences, as well as houses, are at or near a lot line. Typical of older towns, public buildings in Alameda are large, imposing, older structures in the center of town. The small shops along Park and Webster Streets and the many, small commercial centers scattered throughout the neighborhoods, characterize the commercial developments of older, smaller towns. This form gives Alameda a sense of stability which sets it apart from recently developed communities. This character is

considered by citizens to be the major attraction of Alameda, as shown in the City-wide survey of the Goals Study.*

Older Neighborhoods

Some of Alameda's loveliest streets are those which contain a harmonious group of buildings built at different times and which represent a range of architectural styles. In other parts of the City, neighborhoods are more consistent, representing basically one architectural period of style; the bungalows around Burbank Street and the Victorian cottages in the Northside, for instance. The range of architectural styles and the variety of older neighborhoods found in Alameda are exceptional and a great asset to the community.

These older neighborhoods have a human scale and richness of detail which would be difficult to duplicate. Vegetation contributes much to the character of these neighborhoods.

These older neighborhoods also function as service areas. Vital services: convenient commercial, parks, schools and churches are found within easy walking distance of neighborhood residents. These services can play an important role in providing neighborhoods with an identity. The City has older parks, like Lincoln and Franklin, which accentuate the character of their surrounding neighborhoods.

Island City

Alameda once proudly carried the title "City of Beaches". At the end of the nineteenth century and the beginning of this century, every Sunday ferries brought thousands of visitors to swim at the beaches and stroll along the shores of the island city. Over the years, Alameda lost most of its original island character. Much of the shoreline was closed off from the public. The Estuary was developed with industry and houses were built along the shore. The South Shore fill completely changed the character of the bayshore.

Alameda's shoreline has great assets. It has one of the few and longest beaches along the bay with an extraordinary view of San Francisco. Marshes along San Francisco and San Leandro Bay provide a natural element to the shoreline. The water-oriented industries along the Estuary give it the character of a working waterway. They provide variety along the shoreline and are a significant part of the waterfront's history and charm.

There are substantial shoreline areas which have not been developed or which are ready for rebuilding. With an increasing awareness of the importance of the shoreline to Alameda, the City has an opportunity to recapture the feeling of being an island and improve access to its shoreline, which was begun with the development of Crown Memorial Park and Beach.

**Alameda Goals Study: Results of City-Wide Mail Survey*—Urban Management Consultants of San Francisco, Inc., (California, March 1975).

CONTEXT

Context

Introduction

Alameda's land use, circulation and open space are not the exclusive concern of the City of Alameda. Decisions made by the public and private sectors in adjacent cities, the region, the state and the nation all have an impact on Alameda. The intent of this context section is to provide overview information about important decision making bodies and point out some of the major factors which have influenced, and may be expected to continue to influence, Alameda. Four major context levels will be described: the National, the State, the San Francisco Bay Area and the East Bay. As the context being discussed moves closer to Alameda, the emphasis shifts toward more detail and wider scope, and becomes more issue-oriented.

National Context

Decisions, events and trends at the national level have an impact on Alameda. Because of the energy crisis and rising gas prices, for example, people prefer to live closer to their jobs. Cities like Alameda with good accessibility to major job centers are therefore more attractive places to live. By strengthening the market for Alameda's housing, this trend could be very beneficial for Alameda. It could be directed toward restoration and revitalization of Alameda's older neighborhoods and areas where suitable new development is desired. The City must be prepared to channel this pressure, however, so that the haphazard and undesirable growth patterns which occurred in Alameda after World War II do not reoccur, and that the new interest in Alameda will enhance, rather than detract from, the City.

Federal Government

The Federal Government influences communities like Alameda through a variety of direct and indirect programs. As an increasingly important source of funds to local governments, the Federal Government has promoted comprehensive planning at the local level. Since 1954, the Federal Government has required local communities to develop a comprehensive plan in order to receive federal planning funds.

State Context

State laws prescribe the basic requirements for local planning. For example, state law mandates that cities must have a planning agency in order to develop and maintain a long term, general plan for the community's physical development. The laws give a fairly precise description of the mandatory elements for this general plan. In addition, the state defines the authority of local community plans. The State Legislature has provided that local zoning and subdivision approvals must comply with the adopted general plan. The Land Use, Open Space and Circulation Plan for Alameda is required by the state with much of its content determined by the state, and its authority and legal standing defined by the state.*

*See Appendix p. 237 for the requirements of the California State Government Code governing the Land Use, Circulation and Open Space Elements.

Through the creation of single purpose agencies, each designed to cope with a particular area or problem, the state is now reclaiming some planning powers traditionally delegated to localities. But there are limits to the role the state will be allowed to assume. California has a strong tradition of home rule and local control which opposes state planning outside critical areas. The result of this strong bias against state planning is that it is difficult to develop comprehensive planning at the state level. No single, visible entity exists with responsibility for preventing destructive competition between local communities or authority to coordinate the activities of state agencies. As a result, these are often in conflict.

Efforts have been made to involve the state in comprehensive planning. The Legislature's intent in establishing the State Office of Planning and Research was that the state's future growth should proceed within the framework of officially approved statewide goals and policies directed to land use, population growth and distribution and other physical, social and economic development factors.* The Office of Planning and Research, however, does not have any direct implementation or regulatory powers over land use or public works. Though the Office of Planning and Research has produced many special purpose studies in response to other agencies' needs, it has not produced a comprehensive state development plan.

There are several state agencies, such as the Air Resources Board and the Water Resources Control Board, which apply environmental constraints and indirectly provide land use and development controls. These agencies and the constraints they apply will have an increasingly greater role in shaping California's land use patterns.

Bay Area special purpose state agencies, such as the California Regional Water Quality Control Board, the Bay Area Air Pollution Control District and the Bay Conservation and Development Commission, are concerned with Alameda and other Bay Area cities. They are likely to have an increasing influence on the planning of these cities, especially those in environmentally sensitive areas like the San Francisco Bay. However, general comprehensive planning is likely to remain primarily a local function for the foreseeable future. No agency has the authority, nor does it appear politically acceptable to give an agency the authority, to do comprehensive state planning.

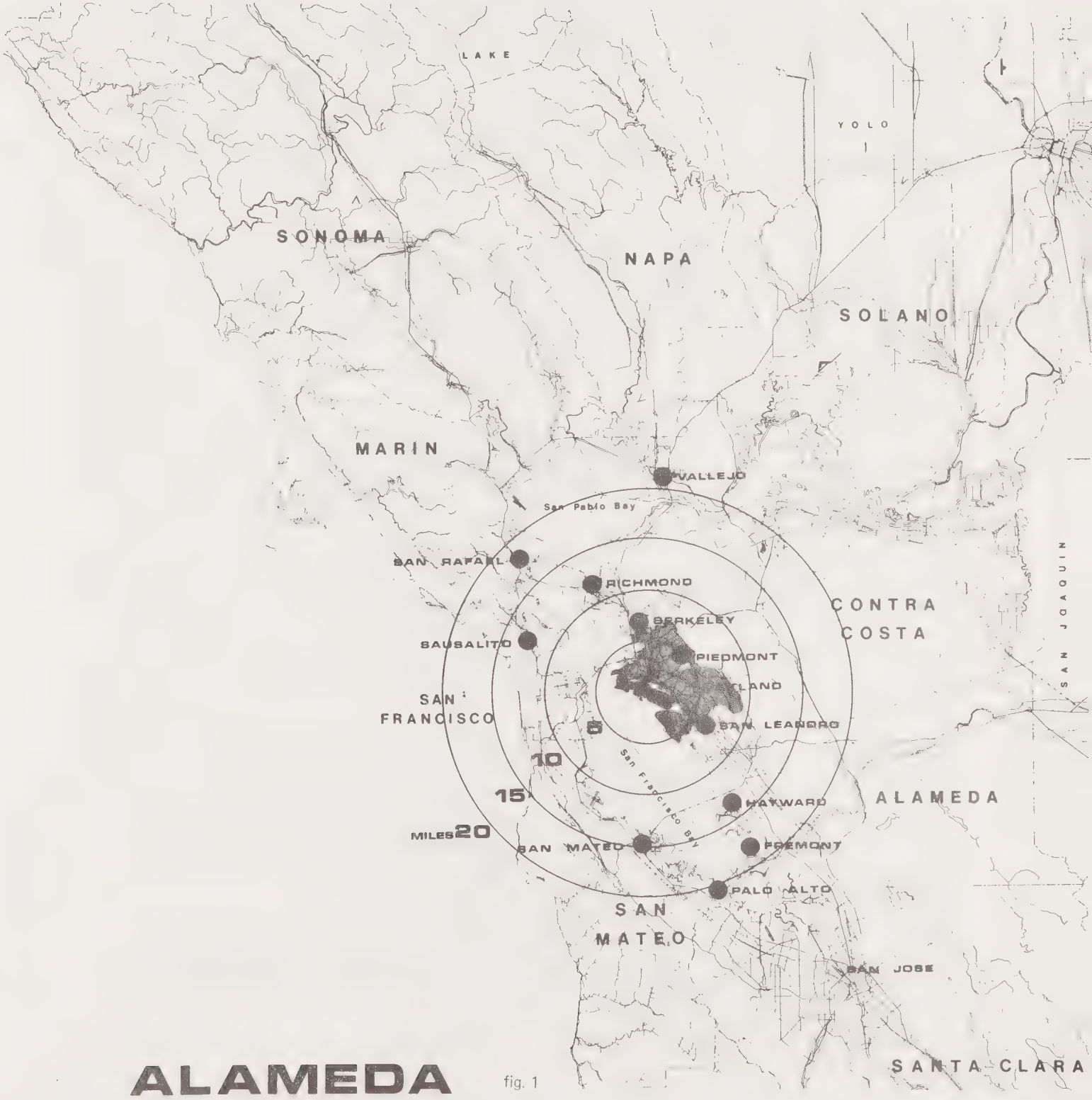
San Francisco Bay Context

The San Francisco Bay Area comprises nine counties which, though extremely varied in their geographical and other features, are a natural unit because of their relationship to the bay and its tributary rivers. The bay system ties them together physically and economically.

In 1970, more than 4.6 million people lived in the Bay Area's forty-five cities. The population is estimated to reach 5.5 million by 1980 and estimates range to 7.5 million by the year 2000.

Because of the bay, mountain ridges and the general terrain, the Bay Area has developed several centers of urban concentration, in contrast to the more conventional growth of metropolitan areas which expand outward from a single concentrated center. The East Bay is a metropolis in its own right. In heavy manufacturing, heavy warehousing, transportation and education, the East Bay has become dominant, leaving San Francisco in a dependent position. There are areas in the East Bay which offer some artistic and cultural activities comparable to San Francisco.

*Sedway/Cooke, *Land and the Environment: Planning in California Today* (Los Altos, California, 1975), p. 21.



ALAMEDA AND ITS REGION

fig. 1

Bay Area communities are not self-contained units, however, but are interdependent. Throughout the Bay Area, people live and work in different administrative boundaries. Of the civilian work force in Alameda, 6,731 live in Alameda and 12,580 live outside of Alameda.* It's important to understand that Alameda is a part of the whole, the "Larger City" or Bay Area metropolis. The problems of the Bay Area to some extent, therefore, become the problems of Alameda, and vice versa. There would not be an issue of air pollution in Alameda, for example, if Alameda were a physically isolated community. Because of the interdependence, Alameda should relate its thinking in terms of planning to the larger context of the San Francisco Bay Area.

The Bay Area is endowed with magnificent physical resources, coastline and mountains. There is little land still available for development in the Bay Area. Over one-half of the Bay Area's nine million acres have been developed. Over three million acres are undevelopable because of topography and other physical constraints. Great care must be taken in planning the Bay Area's land use since the environmental effects associated with improper land use are seldom reversible.

Bay Area Economy

The economic growth of the Bay Area dates back to the discovery of gold at Sutter's Mill, 129 years ago. Since then, the Bay Area has developed a unique diversity of industry and commerce. The San Francisco Bay Area has a civilian labor force of more than 2,200,000 primarily employed in four basic industries: trade, government, services, and manufacturing.**

Recently, gains in service, retailing and government employment have offset declines in manufacturing employment and bolstered the Bay Area's overall employment picture. In terms of employment, the San Francisco Bay Area is recovering from the recent economic recession somewhat faster than California as a whole. During the first six months of 1975, nonagricultural employment in the Bay Area increased by 6% compared with a 2% gain for all of California. Within the Bay Area, employment increases ranged from a 5% advance in the Vallejo area to unchanged in San Jose.***

Due to the scarcity of mortgage funds and the accompanying rise in mortgage interest rates, real estate indicators trended down in the Bay Area in 1974, reflecting a nationwide phenomenon.**** Rising production costs and the economic recession caused construction volume to decline in 1974 as well, though increases in the first six months of 1975 indicated a trend toward a moderate improvement in construction volume. As a result of the increasing costs associated with purchasing new housing, alterations and additions to existing houses have reached a new high in the Bay Area in the past few years.*****

Most economic analysts project that the Bay Area will continue to experience a steady but modest recovery from the economic recession. Construction costs will probably remain high so the trend toward restoring existing residential and non-residential structures is likely to continue.

*1970 U.S. Census.

**Security Pacific Bank, *A Special Report on the Economy of the San Francisco Bay Area* (San Francisco, California, 1975), p. 2.

***Ibid., p. 2.

****Ibid., p. 3.

*****Ibid., p. 5

CITY CENTERED REGION

fig. 2
source: ABAG

Planning in the Bay Area

There are several agencies organized to plan for the Bay Area. These agencies work toward unification of the planning processes in the region and the achievement of benefits for the region and its communities which would be impossible to accomplish if each community considered only its administrative boundaries. As part of the process of developing this Combined Land Use Plan, representatives of these regional agencies have been interviewed and their reports and documents reviewed. Highlights of their goals, objectives and policies are incorporated in this Combined Land Use Plan. In creating this plan, consistency with the policies of these regional agencies was felt to be an important criterion for evaluating proposals.

Association of Bay Area Governments (ABAG)

The comprehensive planning agency for the Bay Area, ABAG, has placed heavy emphasis on interagency cooperation, thus muting, although not overcoming, the fragmentation of planning in the Bay Area. ABAG has completed 18 studies of area-wide needs and problems, including a comprehensive regional plan. The regional plan contains policy guide-making, so that decisions made throughout the region are consistent with ABAG objectives. The policies of the ABAG regional plan call for a city-centered region where growth is guided in or around existing communities (see fig. 2, p. 7), Other ABAG policies include securing open space in anticipation of future needs with first priority given to open space within urbanized areas. The plan also encourages communities to develop opportunities for people to live, work and shop in the same community, thus reducing the need for commuting.* The other ABAG regional guidelines relevant to the Combined Land Use Plan are contained in the Appendix (see p. 237).

Metropolitan Transportation Commission (MTC)

Established by state legislation, MTC was required to develop a regional transportation plan. The MTC Regional Transportation Plan includes estimates of the regional transportation needs, a proposed regional transportation system, and a schedule of priority transportation projects to meet the regional needs.

The MTC regional plan has objectives and policies which provide a guide so that decisions made throughout the region conform to MTC's regional goals. The major thrust of the regional transportation plan is that dependence on the automobile should be reduced and alternative forms of transportation encouraged.** Other MTC objectives pertinent to this Combined Land Use Plan are contained in the Appendix(see p. 239). Like ABAG, MTC reviews and approves local government applications for federal and state funds and assesses whether they are compatible with the MTC regional plan.

San Francisco Bay Conservation and Development Commission (BCDC)

BCDC is a regulatory and planning agency with the primary function of balancing conservation and development needs in the San Francisco Bay and Shoreline zone. The San Francisco Bay Plan developed by BCDC states two major objectives: ***

> Protect the Bay as a great natural resource for the benefit of present and future generations.
>
> Develop the Bay and its shoreline to their highest potential with a minimum of Bay filling.

*Association of Bay Area Governments, *Regional Plan, 1970-1990* (Berkeley, California, July 1970), pp. 23-25.

**Metropolitan Transportation Commission, *Regional Transportation Plan* (Berkeley, California, 1974), pp. 8-22.

***San Francisco Bay Conservation and Development Commission, *San Francisco Bay Plan* (San Francisco, California, January 1969), p. 7.

BCDC has jurisdiction over the open water surrounding Alameda and a shoreline band within 100 feet of the line of highest tidal action. Permits must be obtained from BCDC for work in both these areas.

East Bay Context

The East Bay is defined as the western sections of Contra Costa and Alameda Counties stretching from Richmond in the north to Fremont in the south. It is an intensively developed band of population and activities. Of all the East Bay communities, the activities in the City of Oakland have by far the greatest significance to Alameda. Alameda is bounded by Oakland, many of Alameda's residents work and shop in Oakland, and the only access to Alameda is through Oakland, Because of this closeness, Oakland is emphasized in this section, especially the Port of Oakland whose operations are adjacent to Alameda. The rest of the East Bay will be discussed as a whole, describing factors, agencies and issues which affect East Bay land use, open space and circulation.

Land Use in the East Bay

The first towns in the East Bay - Oakland, Alameda and San Leandro - developed during the Gold Rush boom along the Bay where there was good water access to rapidly growing San Francisco. The skeleton on which the East Bay grew was determined in those Gold Rush days. Development has concentrated near the Bay. Until recently, the spread of urban growth had not surged significantly beyond the limits of local water transport in the 1850's.

In the early years, all East Bay cities were economically dependent on San Francisco. When railroads were built, however, a great deal of economic activity could be carried on independent of San Francisco. After the transcontinental railroad reached its Alameda terminus in 1869, the East Bay became the regional rail-head and, as a result, the focus of manufacturing activity. Across the Bay, San Francisco consolidated its position as the regional financial shipping and cultural center.

From the 1860's on. there was commuting by ferry from Oakland, and particularly Alameda, to San Francisco. Suburbs, composed largely of spacious homes, started to develop in the East Bay. But suburban development was small and circumscribed until the trolley came in the 1890's. It was in the East Bay that the street car came into independent existence and spurred growth. The Peninsula and Marin Counties, in contrast, were served by railroads, and their growth in this period was much slower. The East Bay added nearly 400,000 people in the thirty years from 1900-1930, while the other two suburban areas added perhaps 75,000.*

In the 1920's, the automobile began to influence East Bay land use patterns and to dominate over the transportation modes. The completion of the Bay Bridge in 1937 accentuated this trend. In fact, all ferry service from East Bay cities was discontinued at that time so as not to compete with the Bridge. The auto allowed people to live farther from core cities and drive into those cities to work. Communities on the periphery of built up areas, Albany, San Leandro and Hayward, more than doubled their population during this period.

World War II marked a major turning point for the East Bay. Cities near the water, like Alameda and Richmond, experienced major population growth and industrial development. Alameda became a major hub of support for war activities. During the war, the Naval Air Facility opened

*James E. Vance, "Geography and Urban Evolution", *The San Francisco Bay Area*, ed. Stanley Scott (California, 1966), p. 157.

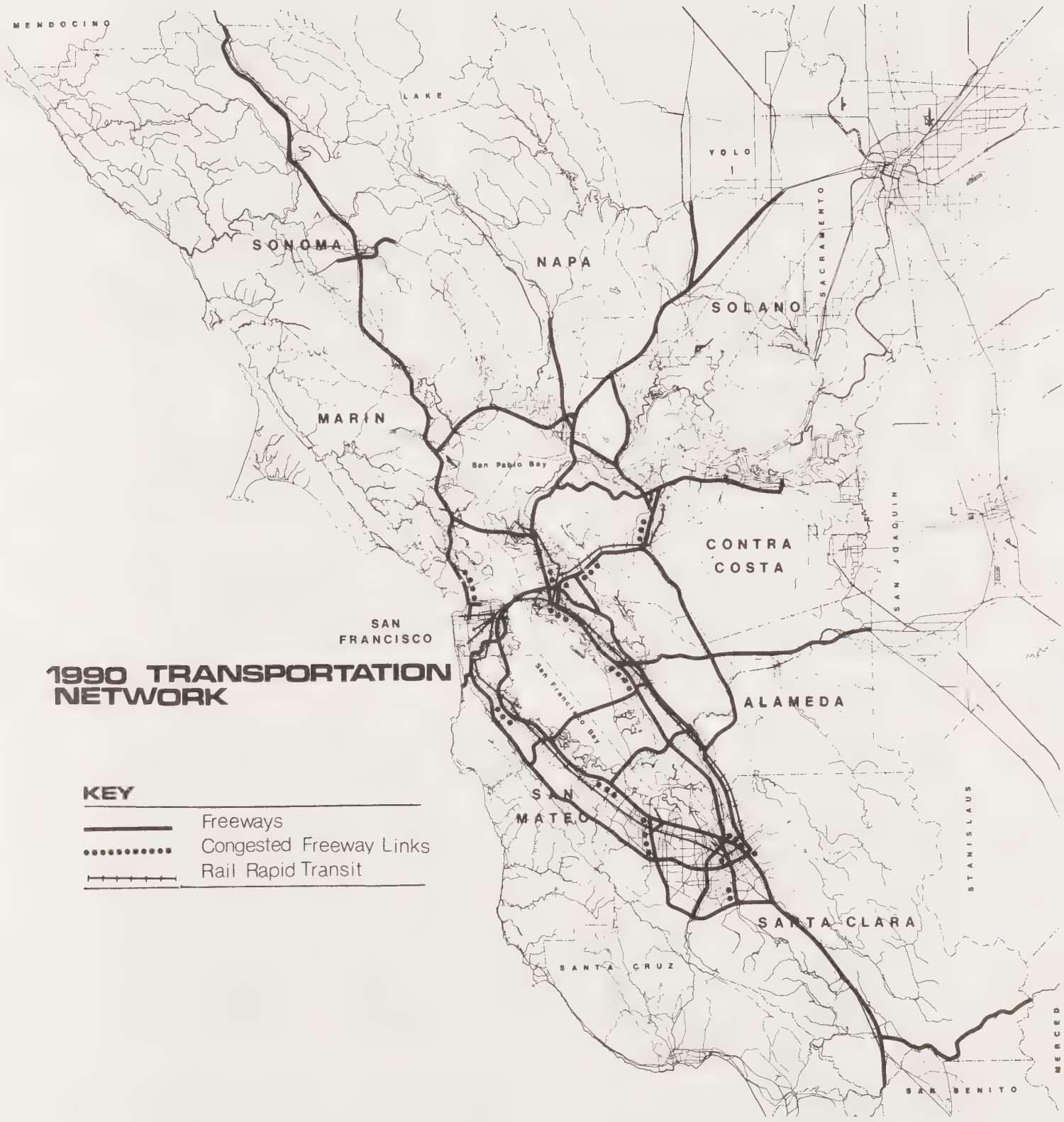


fig. 3
source: ABAG

and the Bethlehem Pacific Shipyard was established. The population more than doubled in the five years between 1940 and 1945.

Since the war, suburban expansion has continued in the East Bay. Most new construction has taken place outside the older cities, mainly in western Contra Costa County and southern and western Alameda County. Despite this strong prevailing trend, however, there has been substantial, multi-family construction in older cities, such as Oakland and Alameda, since 1960.

Industry - particularly manufacturing - has increasingly shifted to locations outside the core cities of the East Bay. Most new industrial development has been in the southern part of the East Bay - Fremont, Hayward and San Leandro. The same shift from older East Bay cities to newly developing areas holds for commercial development as well. Certain firms, however, such as finance, real estate and insurance, continue to locate in the East Bay core cities. The East Bay cities of Oakland and Berkeley have held on to these and other typically core city functions, such as ethnic and specialty restaurants and shops.

High residential densities, ten or more units per acre, predominate in the older, core communities of the East Bay - Oakland, Berkeley and Alameda. Suburban tracts, with medium residential densities of five to nine units per acre, mark the newer East Bay flatland communities. Low density residential areas, of from one to four units per acre, characterize developments in the East Bay hills.* Multiple dwellings, located primarily in the urban core until the 1960's, have since become increasingly familiar in newer communities in the East Bay.

One land use issue which faces older East Bay communities is the deterioration of their residential and industrial areas. These areas should be rehabilitated if these communities are to remain vital, but there are problems. Many East Bay communities have circulation problems which new developments would exacerbate. The East Bay is bordered by areas having major environmental importance: The Bay and Bay shoreline to the west and the extensive parklands along the hills to the east. New developments could endanger these resources.

The present pattern of land use in the East Bay is one where manufacturing and industrial plants concentrate along narrow bands paralleling the Nimitz and Interstate 80 freeways. This industrial belt reaches as far north as Martinez and south through San Leandro, Hayward, Union City and Fremont. Industrial land uses also cluster near the ports of Oakland, Alameda and Richmond, and around the Oakland International Airport.

Business and commercial or "downtown" areas are fairly well defined in larger East Bay cities. "Strips" of business and commercial development extend out from these downtown areas along major streets. Strip commercial development is particularly prevalent in older urbanized areas, but has spread to other areas such as Mission Boulevard and other streets in the Hayward area.

Land Use Planning in the East Bay

Several East Bay governmental agencies influence land use.

Alameda and Contra Costa County

The counties of Alameda and Contra Costa prepare general plans, the major role of which is to plan for unincorporated areas and coordinate and integrate the plans of local municipalities.

**Land Use, Open Space and the Government Process,* ed. Edward Ellis Smith and Durward Riggs, (California, 1974), p. 18.

The county plan outlines proposals for major land areas and circulation needs throughout the county. Recently Alameda County has concentrated more on developing general policies to guide land use, open space and circulation decisions and less on allocating specific uses to specific locations.

Under state law, counties may create an Airport Land Use Commission. These Commissions formulate comprehensive land use plans for areas surrounding public airports. They may develop height restrictions, determine building standards, including soundproofing, and specify uses for land adjacent to airports. In 1974, the Alameda County Airport Land Use Commission (ALUC) prepared a land use plan for Oakland Airport which included a land use plan for Bay Farm Island. The ALUC plan indicated industrial, commercial and non-residential uses for the parts of Bay Farm Island which the Commission felt had serious noise problems. Communities affected by ALUC land use decisions have the right to overrule them by a four-fifth's vote of their local governing body. In August 1974, the Alameda City Council overruled the ALUC plan for Bay Farm Island, preferring to make its own determination of land use. Because of court action, the ALUC staff has prepared a new draft Airport Land Use Policy Plan which contains alternative noise impact projections for Bay Farm Island. From these, the Commission will select the Bay Farm Island noise impact zone.*

Alameda County Flood Control and Water Conservation District

The major work of the Alameda County Flood Control and Water Conservation District is to construct and operate flood control, drainage, water supply and conservation, waste and storm water facilities.

Of the 821 square miles within the boundaries of Alameda County, 728 square miles are included in District construction zones. The City of Alameda is not. The District, however, does drainage studies for all county cities, including those which are not in its construction zone. The Alameda City Council recently requested that the District undertake an investigation of Alameda drainage. This study is currently in progress.

In coordination with its construction programs, the District has also undertaken a cooperative program of recreational development. The District has had an important role in the prospective development of the San Leandro Bay Park. Land, which will be a part of the park, has been purchased by the District for flood control purposes.

East Bay Municipal Utility District (EBMUD)

The East Bay Municipal Utility District influences East Bay land use patterns through its watershed land holdings. The District has large land holdings in the East Bay, the majority of which are closed to the public. EBMUD has, however, opened the Pardee and Lafayette reservoirs for recreational use and leases some land to the East Bay Regional Park District. In the future, these lands will become increasingly important open space assets in the East Bay.

Its provision of water and sewer services to East Bay cities also influences East Bay land use. EBMUD has not pursued a policy of trying to provide service in conformity with any land use plan. It has generally tried to provide services to planned new developments, though there may be delays in proposed developments until the necessary services can be provided. EBMUD has increasingly assigned the costs of providing services to the developer. This tends to discourage development where the costs of installing services are high.

*Alameda County Planning Department, *Draft Alameda County Airport Land Use Policy Plan and Environmental Impact Report,* (Hayward, California, December, 1976).

The availability of EBMUD's water and sewer services affects the timing and the costs to the City and developers of new development in Alameda. The lack of rain during the winters of 1976 and 1977 is creating a water shortage. EBMUD has established a policy that new landscaping projects will not receive water until the drought crisis is past. Over the long term, however, there should be enough water and sewer capacity to serve the existing developments and new developments proposed in this plan on the Main Island. Bay Farm Island has more limited facilities.

There is, at present, only one water line serving Bay Farm Island which is adequate to serve approximately 1400 new residences on Bay Farm Island. However, EBMUD has plans for additional supply lines which will be adequate for proposed new developments. One plan is to build a new water line down 98th Avenue in Oakland across the Port of Oakland connecting to Bay Farm Island. An early completion of this line is dependent upon federal funds. If these are not available and construction of this line is delayed, EBMUD will instead construct a pipeline across the San Leandro Channel near the Bay Farm Island Bridge.

Presently, EBMUD would assume the entire cost of needed improvements in the water system*. EBMUD has questioned whether there is sufficient sewage capacity to serve the proposed new developments on Bay Farm Island. The general policy of EBMUD is to provide interceptors which collect sewage from municipalities. Cities are responsible for bringing sewage to the interceptors. Presently, the City of Alameda has a unique situation. EBMUD provides a spur from the interceptor, at Clement Avenue and Pearl Street, to Krusi Park Pumping Station (see (see fig. 42, p. 257). EBMUD has stated that the spur and pumping station are now near capacity and could not handle the new developments on Bay Farm Island, and that they are unwilling to pay for expansion of the pumping station or spur to connect to their interceptor.**

It is difficult to determine how much excess capacity there will be at the pumping station to handle new Bay Farm Island sewage flows. Presently stormwater flows into the Krusi Pumping Station from roofs and street catch basins. The City of Alameda is working with EBMUD to set up a program to disconnect these stormwater inflows and increase the available capacity of the station. In addition, the City is working to update estimates of growth and sewage quantities***. If it became necessary to make improvements to the Krusi Park Pumping Station to handle sewage from new developments on Bay Farm Island, the Alameda City Council voted on September 21, 1976 that the City would not assume any financial responsibility for the improvements, either the developer or EBMUD would have to pay.

Open Space in the East Bay

East Bay Regional Park District (EBRPD)

The East Bay Regional Park District (EBRPD) is one of the few agencies of its kind in California. Serving most of Alameda and Contra Costa Counties, it presently owns or operates 37 parks with a total land area in excess of 44,000 acres. Alameda has a regional park, Crown Memorial State Beach Park, operated by EBRPD. The District has completed a long range Master Plan for land acquisition in which two areas affecting the City of Alameda are mentioned: San Leandro Bay and Bay Farm Island.

*Discussions with Bill Bradbury on November 17, 1975, Richard Kolm on June 8, 1976 and Donald Larkin on January 17, 1977.

**Discussion on June 8, 1976 with Roger Dolan of EBMUD.

*** Memorandum from Mark Hanna to the Alameda Planning Board November 19, 1976.

The San Leandro Bay site would be a regional shoreline recreation area, providing a combination of trails, recreation areas and wildlife preservation. It is classified as high priority among District projects. The bulk of the land for San Leandro Bay Regional Shoreline is owned by the Port of Oakland which has agreed to lease it to the EBRPD. There is also an agreement pending with the City of Alameda to lease its 37 acre dump site for part of the park when this site is no longer needed for garbage disposal.

Bay Farm Island is mentioned in the EBRPD master plan as an area considered for acquisition, but did not qualify because "any recreational use beyond shoreline access is too speculative to be evaluated at this time."* There has been, however, informal interest in acquiring open space on Bay Farm Island to create linkages with the San Leandro Bay Regional Shoreline.

The EBRPD is authorized to "control, operate and maintain a system of trails". In the past, most of these trails have been within parkland boundaries. The District has recently determined that these internal trails could no longer accommodate the demand for equestrian, hiking, bicycling, etc., and has prepared a plan for trails which would extend beyond and interconnect the parklands. EBRPD trail plans show trails around San Leandro Bay and South Shore in Alameda (see fig. 4, p. 15).

The East Bay still has open space assets which have not been exploited. It is fortunate when compared to other large metropolitan areas which have already missed the opportunity of saving major open spaces. The next few years will be the last opportunity to retain these assets. The City of Alameda has much to gain by supporting the EBRPD in its attempts to preserve valuable East Bay open spaces and enhance East Bay recreational opportunities.

Transportation in the East Bay

The East Bay transportation system is highly developed. It includes two major ports, a commercial airport, freeways and 50 miles of the BART system. Alameda-Contra Costa County Transit District (AC) buses provide extensive local and trans-bay service. Travel demands upon all East Bay facilities have been increasing. Peak congestion is a problem throughout the East Bay, but especially on the Bay Bridge. Studies by Caltrans and MTC indicate major transportation corridors, including the Nimitz Freeway, will be seriously deficient by 1995.

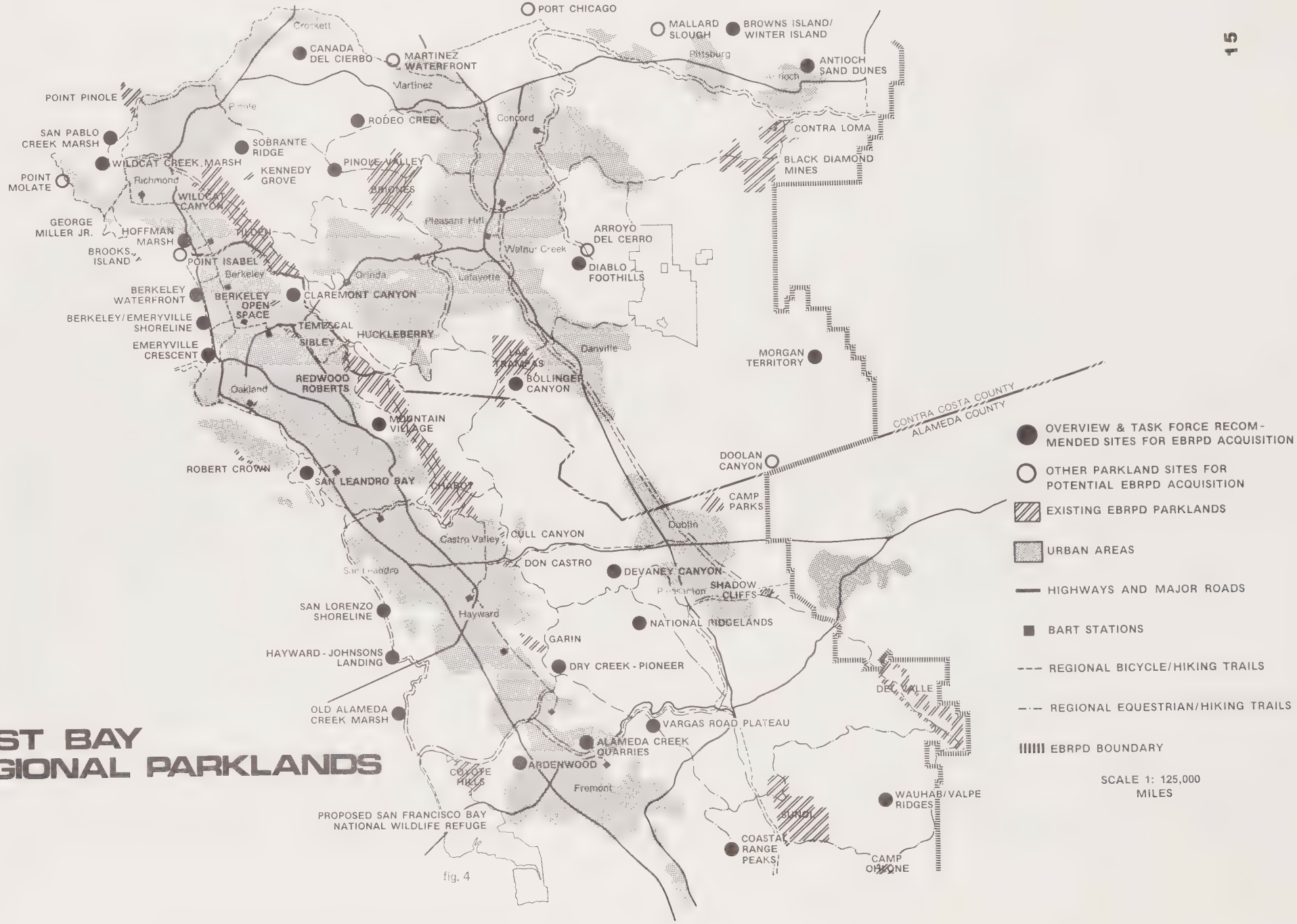
The major proposals for East Bay highways, streets and transit systems are described here, stressing those which would have the greatest impact on Alameda.

These proposals face problems being implemented because of the limited funding available for transportation, and the sensitivity and opposition to any transportation improvements which inflict damage on the natural environment or disrupt East Bay neighborhoods. There are unlikely, therefore, to be many additions to the East Bay freeway, highway and street systems.

Dissolution of the Proposed Southern Crossing

The recent series of highway decisions which have had by far the greatest impact on Alameda are those which led to the demise of the proposed Southern Crossing of San Francisco Bay. There were two parts of the Southern Crossing. One was the bridge itself, extending from the India Basin in San Francisco to a point in the Bay several thousand feet from Alameda's shoreline. The other was known as the Offshore Freeway. It involved two branches which

*Overview, Parkland Site Evaluations (Oakland, California, 1973), p. 71.



EAST BAY REGIONAL PARKLANDS

fig. 4

joined the bridge to Alameda, crossed Alameda and connected with other East Bay communities. The Offshore Freeway was seen as a replacement for the existing Route 61 in Alameda. One branch of this road went up Main Street in Alameda and was connected with Oakland by a tube under the Oakland Estuary. The other branch went along the Alameda shoreline to Bay Farm Island and continued south.

The Southern Crossing had been proposed, in various forms, since 1946, and had met with considerable opposition. Finally, in June 1972, a vote was taken in six Bay Area Counties which determined that the Southern Crossing could not be built without the specific approval of the State Legislature. Since then, the Southern Crossing has been considered an inactive project.

Route 61, the Offshore Freeway section of the Southern Crossing, was separate. It had been adopted into the state highway system and had a different source of funds from the rest of the Southern Crossing. In September 1975, a bill was passed by the California Legislature prohibiting construction of this Offshore Freeway.

The decisions which led to the dissolution of both parts of the Southern Crossing had a tremendous impact on Alameda. The Southern Crossing, though certainly providing Alameda with excellent access, would have created a major stimulus to high density development and undermined Alameda's existing residential character. The Offshore Freeway would have had a very negative visual impact on Alameda's shoreline. There was considerable opposition to the Southern Crossing in Alameda, subsequently reflected in the Community Goals Study.

San Leandro Bay Crossing

The same bill which abolished the Offshore Freeway established a connection across San Leandro Bay from 66th Avenue in Oakland to Doolittle Drive. Subsequently, however, legislation was adopted which deleted this freeway link. Other crossings of San Leandro Bay presumably would still be permitted, given funding which is presently unavailable. Also, the lease agreement between the Port of Oakland and the East Bay Regional Park District for the San Leandro Bay contained a 10 year moratorium on any bridge or surface crossing of San Leandro Bay.

Depending on where it tied into Doolittle Drive, there would be traffic advantages to Alameda of a San Leandro Bay crossing. It would provide a connection between Bay Farm Island and Route 17, diverting Bay Farm Island traffic from the main island. The farther east the connection to Doolittle Drive was made, the less benefit it would have for Alameda.

The Transportation Task Force of the Community Goals Study recommended support for a connection between 66th Avenue and Doolittle Drive. It was noted, however, that the route should be one which would have a minimum adverse impact on the ecology of San Leandro Bay. There are several alternative types of crossing which would have different impacts. A tunnel would have the least impact on the marsh or the bay bottom, but would be very expensive. A causeway or bridge would be cheaper, but would inflict greater environmental damage on the bay. Recently, the Alameda City Council expressed its support of a request by East Bay legislators to have the Metropolitan Transportation Commission undertake a study of transportation needs in the San Leandro Bay area.*

*City of Alameda Resolution No. 8603, October 6, 1976.

Industrial Corridor Between San Leandro and Hayward

The County of Alameda, together with MTC, Caltrans and the Cities of Hayward and San Leandro, studied the possibility of a new industrial corridor. This study resulted in the proposal for a highway through the industrial area of San Leandro and Hayward. The proposed road would be seven miles long, extending from Route 61 at Davis Street in San Leandro to Route 92 in Hayward. It would be constructed to expressway standards. Initially built to four lanes, it could be expanded to six. The road is planned to take industrial traffic off residential roads and enhance the development of recreational and industrial areas in these communities. An environmental impact statement has been prepared on this industrial corridor, but no specific funding or timing has been established. The impacts, positive or negative, of this road on Alameda would be slight. The corridor would provide Alamedans with access to points along the corridor and a shorter route to the San Mateo Bridge. Increase in traffic through Alameda because of the corridor is unlikely unless the capacities of the Bay Farm Island and High Street Bridges were increased, which appears extremely doubtful. What seems more likely is that, as industrial development increases along the corridor, there will be more trucks and congestion on the Nimitz Freeway, which is the major road to Alameda.

Doolittle Drive

For the past ten years, San Leandro and Oakland have been involved in a cooperative project to plan the widening of Doolittle Drive from Davis Street, the limit of the previously discussed industrial corridor, to Hegenberger Road. This widening would link the industrial corridor to the Oakland Airport and improve its access from the Nimitz Freeway.

There have been proposals to widen Doolittle Drive to four lanes from Hegenberger Road to the Bay Farm Island Bridge. Access to developments on Bay Farm Island would be improved by this widening. It is unlikely it would encourage traffic to drive through Alameda unless the capacity of the Bay Farm Island Bridge were increased. The Alameda County Transportation Advisory Commission has assigned this widening a high priority in its recommendations to the State Highway Commission.

The City of Oakland has recommended that Doolittle Drive be no more than four lanes because the intersection with Hegenberger Road cannot accommodate more traffic.

The Alameda City Council has asked Alameda County to delete proposals for widening the section of Doolittle Drive between Island Drive and City Line Road from its future recommendations to the State and to postpone action on widening until the City of Alameda requests it.* The Council took this action to further discourage outside traffic from driving through the City.

Route 24 — 17, Grove-Shafter Completion

This proposal would complete the last link of the Grove-Shafter Freeway (Route 24) in West Oakland from the MacArthur Freeway to the Nimitz Freeway. The City of Oakland sees this new link as necessary to their Central Business District redevelopment. Completion of this highway would provide Alamedans with a better connection to parts of Oakland, Berkeley, Walnut Creek and several other East Bay communities. When this final link would be built is unknown due to the lack of funds.

Alameda-Contra Costa Transit District (AC Transit)

AC Transit provides the East Bay's urbanized areas with bus transit. In the past ten years, AC

*City of Alameda Resolution Nos. 8616 and 8617, October 27, 1976.

Transit has established a reputation as a flexible transit system which responds to the changing transit needs of East Bay communities. Over the past few years, one of the focuses of AC Transit activities has been establishing coordination between BART and East Bay cities.

Many Alamedans ride AC Transit buses. AC Transit is presently investigating new Alameda routes to provide better service from Alameda to BART, the Oakland Airport, Bay Farm Island and the industrial area along the Estuary. It is assumed that AC Transit will cooperate in providing Alameda with improved bus service wherever the need and the passenger demand can be established. It should be noted, however, that transit systems are limited by a shortage of funds.

Bart

The development of BART, and the introduction in 1974 of BART transbay service, are major transit additions to the East Bay transportation system in the past few years. BART does not pass through Alameda, but there are two Oakland BART stations, Fruitvale and Lake Merritt, which are accessible from Alameda by car or bus. BART provides Alamedans with modern, fast transit service from these stations to other East Bay cities and San Francisco. Because BART has had problems in its initial development and the potential for bus connections from Alameda to BART has not been fully achieved, the full significance of BART to Alamedans has not yet been completely realized.

BART plans several possible extensions to other East Bay communities. The proposed extension to the Oakland Airport would have an impact on Alameda. About five years ago, BART and the Port of Oakland began cooperative studies on improved transit service to the airport. They evolved three potential systems: (1) improved bus access, (2) a direct line taking off from the BART main line, (3) a shuttle running between the Coliseum BART Station and the airport. Which alternative is chosen will depend on such factors as how fast the airport grows, what funding is available, and whether the San Francisco Airport has a higher priority for a BART connection.If the Oakland Airport were the first airport to have a rapid transit connection, travel time to the airport would be reduced, especially during rush hours. Oakland Airport could start to attract passengers who would otherwise have used the San Francisco Airport.

A BART extension to the Oakland Airport would provide some service to residents of Bay Farm Island. In general, it would not improve BART service to Alameda significantly. It would, however, relieve congestion on the roads leading to the airport, providing more capacity on these roads for cars from Alameda.

City of Oakland

All access to and from Alameda is through Oakland. Many of Alameda's transportation and urban concerns will only be solved by changes in Oakland. Oakland is a large, complex city, with many pressing urban needs and problems. As a result, issues related to Alameda tend to have fairly low priority for Oakland.

Oakland has more natural physical attributes than most major metropolitan areas in the country. The city contains beautiful foothills and plains, heavily wooded canyons and creeks, extensive shoreline on the San Francisco Bay and Lake Merritt. The climate is generally more desirable than in San Francisco.

Even though there are many beautiful sections of the city, much of its visual potential has been sacrificed to industry, commercialized transportation arterials and sprawl. Some of the least desirable of these areas are unfortunately those closest to Alameda, which tends to further

separate Alameda from Oakland. Alameda is even more of an island than that created by the Estuary due to non-residential development between the water and the Nimitz Freeway.

The Oakland City Planning Department and the Oakland Redevelopment Agency are emphasing the problems of urban form and appearance. Oakland is beginning to be appreciated for its potential and is becoming known as an "underestimated and unjustly maligned" city. This, of course, does not change the fact that some of the more industrial and blighted sections of Oakland are the closest parts of the city to much of Alameda. It does lend hope that Oakland will be willing to work on its visual image and improve the edges of Oakland adjacent to Alameda.

Port of Oakland

Adjacent to much of Alameda is land containing the activities of the Port of Oakland (see fig. 5).* The Port of Oakland extends from north of the San Francisco-Oakland Bay Bridge approximately 19 miles along the Estuary to the Oakland International Airport. Facilities include four major marine terminals, 1,000 acres of industrial and commercial land, 11,500 acres of undeveloped land and tidelands, and 2,500 acres of airport. The Port estimates the value of the Port property at $300 million. Private holdings within the Port area are estimated at another $450 million.

The Port of Oakland is an independent city agency, responsible for its own land use planning, facilities operation and control of its revenues. In 1975, the Port adopted an $18 million improvement program to finance a new container terminal, freight station, and airport improvements.

Marine Terminals

The Port of Oakland is the largest containership port on the West Coast and one of the largest in the world. It includes four major terminal areas with 25 berths, 11 of which are container berths. The Port plans extensive future expansion of its marine terminals, including development of a submerged 138 acre area south of the Bay Bridge and 450 acres north of the Bridge as marine terminals.

Properties

The Port of Oakland is also the developer/manager of various commercial areas within the Port through its Properties Department. The major developments of the Port are: Jack London Square, a redeveloped waterfront restaurant, office and shopping area; the Embarcadero, a developing waterfront commercial project; the 300 acre Industrial Park adjacent to the Airport and the Distribution Center, a new area of approximately 175 acres adjacent to the Industrial Park.

Oakland International Airport

Oakland International Airport is one of three major commercial airports serving the Bay Area. It is located on the peninsula adjacent to Bay Farm Island. In 1975, Oakland Airport served 2.2 million passengers.

The airport is divided into two facilities. North Field is the site of the original airport dedicated in 1927. It serves predominantly general aviation with two main parallel runways and a crosswind runway. The Board of Port Commissioners by resolution has indicated that executive jet and heavy aircraft will be moved from the North Field's Runway 27 to the South Field's

*The descriptive material on the Port of Oakland is based on the Draft Port of Oakland Master Plan (Oakland, California, December, 1975) and the Port of Oakland Revenue Bond Publication (Oakland, California, April, 1975).

Runway 29. In the future, the North Field will have less impact on the noise level and safety of Bay Farm Island.*

The South Field is the commercial aviation facility. At present, the bulk of South Field users travel within California, only slightly over 5% travel interstate or internationally.** The South Field has a 10,000 foot runway which is being extended to 12,500 feet. The South Field is located on 1600 acres of land, most of which is yet to be developed. It is the South Field, and the activities associated with it, which has the greater noise impact on Alameda.

The Port's Draft Airport Master Plan provided for expansion to 24 million annual passengers (MAP). This expansion was based on the original Regional Airport Systems Study prepared by ABAG which allocated 24 MAP to Oakland Airport by 1985. This ABAG study was subsequently revised downward, forecasting only 7 to 8 MAP by 1985. The Port is now in the process of revising its Master Plan.

*For more detail, see City of Alameda Noise and Safety Elements.

**Alameda County Planning Department, op. cit., p. 11.

fig. 5

PORT OF OAKLAND

GENERAL ISSUES

Introduction

This section contains the general land use, open space and circulation issues and recommendations for the City as a whole. The following topics are covered in each of the three categories: general background information, Goals Study Issues, existing conditions, and major problems (with discussions of alternative approaches to these problems where alternatives were considered). The analyses of issues provide background information for the recommendations. These recommendations follow the discussion of issues. The Community Goals Study and the other General Plan elements play a significant role in defining the issues and recommendations.

Community Goals Study

The 1975 Goals Study was specifically directed at identifying a baseline of citizen attitudes and goals to aid in the revision of the City's General Plan. The number of citizens who participated in all aspects of the Goals Study, along with the quality of the results, lend a high degree of validity to the study.

All documents were carefully studied as one of the initial steps in the preparation of this plan. The areas of concern expressed in the Goals Study documents, and particularly the specific goals and objectives of the Goals Study task forces contained in the final report, were vital in determining the issues considered and the recommendations made in this plan.* The general format is to summarize the issues raised by the Goals Study task forces at the beginning of each major topic.

Relation to Other General Plan Elements

Introduction

Since 1955 the State of California has required its cities and counties to prepare and adopt a general plan. The plan must include specified elements. From the first two mandated elements,

*_Goals for Alameda, The Final Report of the Community Goals Study,_ was adopted by the Alameda City Council on July 15, 1975 (Res. 8381).

Land Use and Circulation, the list has been expanded several times until, at present, nine elements are required. The State Office of Planning and Research has published guidelines to assist localities in preparation of the elements.

These guidelines state that the General Plan elements should be consistent with one another. The City of Alameda has prepared most of the elements as separate reports that also serve as background for the Combined Land Use Plan. This is consistent with the guidelines which note that . . . "in a hierarchy of significance, land use and circulation can be defined as the most basic or fundamental general plan elements, since all other elements, mandatory or optional are in some way related to land use and circulation . . ."*

The approach within the plan has not been to repeat or summarize recommendations of other elements, but to incorporate or expand upon the recommendations where they are directly related to land use, open space or circulation. Several of these elements, noise and airport safety particularly, contain recommendations which place restraints on land use planning. Following is an itemization of the City's adopted general plan elements and a summary of the issues and recommendations they develop in relation to the Combined Land Use Plan.

Conservation Element

The Conservation Element was adopted in June 1973. Its major emphasis is on the maintenance, restoration and enhancement of Alameda's water areas, identified as the City's principal natural resource. The element includes goals and policies designed primarily to preserve the City's shoreline and encourage its use for recreation and conservation. It recommends that the bodies of water within and around the City be zoned as open space. It also calls for measures to improve drainage in areas of persistent flooding.

Scenic Highways Element

The Scenic Highways Element was adopted in March 1976. The basic purpose of this element, as set forth by the State, is the protection and enhancement of State Scenic Routes. There are no state scenic routes in Alameda, and no routes which would meet the state criteria. Accordingly, the element is focused on the issue of scenic resources in the City, and the ways in which they could be enjoyed by the public. The element considers several modes of travel, and recommends revision of the existing scenic driving tour; incorporation of the Bicycle Route Master Plan; establishment of several walking tours; and improvements to the entrances to the City.

Housing Element

The Housing Element was adopted in March 1976. It was published in three phases: the first, a compilation of population and housing data, primarily from the 1970 Census; the second, a description of the results of special research studies performed by the staff; and the third containing conclusions and recommendations. A number of these policies included in the element affect land use and density. These include the preservation of the City's older neighborhoods as a means of conserving its chief source of moderate-cost housing; a general increase in the stock of moderate-cost housing units; inclusion of units of varying sizes and prices in new development; encouragement of alternative forms of housing tenure in the City; expansion of the owner-occupied housing stock; and deconcentration of subsidized housing units. In addition, the Housing Element calls for designation within the Combined Land Use Plan of specific sites for future construction of moderate-income units.

*General Plan Guidelines Council on Intergovernmental Relations, (Sacramento, California, September 20, 1973, p. 111-6.

SEISMIC ZONE MAP INDICATING 200 YEAR TSUNAMI RUN-UP

0 1000 2000 4000
SCALE IN FEET

NORTH

fig. 6

Seismic Safety/Safety Element

The Seismic Safety and Safety Elements were prepared as a joint report and adopted in September 1976. The report contains an analysis of potential seismic hazards in the City and recommends mitigating measures to deal with them. A Technical Section investigates, in geotechnical terms, what might happen to the soils in Alameda in an earthquake. A distinction is made between the two basic soil types in the City: Bay Mud (filled areas) and Merritt Sand (non-fill areas). The element recommends that a soils investigation be prepared for all new developments, with special consideration given to facilities that provide critical services or that involve large concentrations of people in a single structure (see fig. 17, p. 69). The primary recommendation related to land use planning is that no critical facilities be located in areas that are subject to flooding from tsunamis (sea waves caused by earthquakes) Such areas are limited in Alameda, confined to low-lying shoreline areas and the Municipal Golf Course (see fig. 6, p. 25).

Airport Safety Report

The Airport Safety Report, although adopted as a part of the Safety Element in September 1976, was published as a separate document. Airport safety requires particular attention in Alameda because of the impact on the community of two major airports: Metropolitan Oakland International Airport (OAK) and the Alameda Naval Air Station (NAS). The Airport Safety Report delineates safety zones with land use restrictions adjacent to each of these airports, based on the most likely locations of airplane crashes. The safety zone configurations and land use restrictions are based on different methodologies for each airport. Zones for OAK are based on the historical pattern of civil airplane crashes in California; zones for NAS are based on the AICUZ (Air Installation Compatible Use Zoning) system developed by the Department of Defense for application to military airports. The specific locations and effects of the safety zones are described in the Bay Farm Island and Estuary Sections of the Plan.

Noise Element

The Noise Element was adopted in September 1976. Noise is a critical issue in Alameda, due largely to the proximity of the Oakland Airport and the Naval Air Station. There are a number of other sources which create high noise levels in the City, including overflights from San Francisco Airport, surface noise on the City's major streets, and specialized sources, such as the Alameda Belt Line Railroad and the Park Street Bridge. Included in the Noise Element are a number of detailed recommendations for reducing noise levels at the source, as well as for mitigating its impact.

The Noise Element has a considerable effect on land use planning through its establishment of a system of land use compatibility, based on the State Guidelines.* The element identifies existing CNEL (Community Noise Equivalent Level) contours (see fig. 36, p. 166), and defines land uses according to their compatibility within these contours. The definitions of compatibility and the designated land uses are included in the Bay Farm Island Section.

The recommendations of the Noise Element and their impacts on the Combined Land Use Plan are discussed in several places in the Plan. The major discussions concern surface noise within the general circulation issues segment, noise from the Oakland Airport within the Bay Farm Island segment, and noise from the Naval Air Station within the Estuary segment.

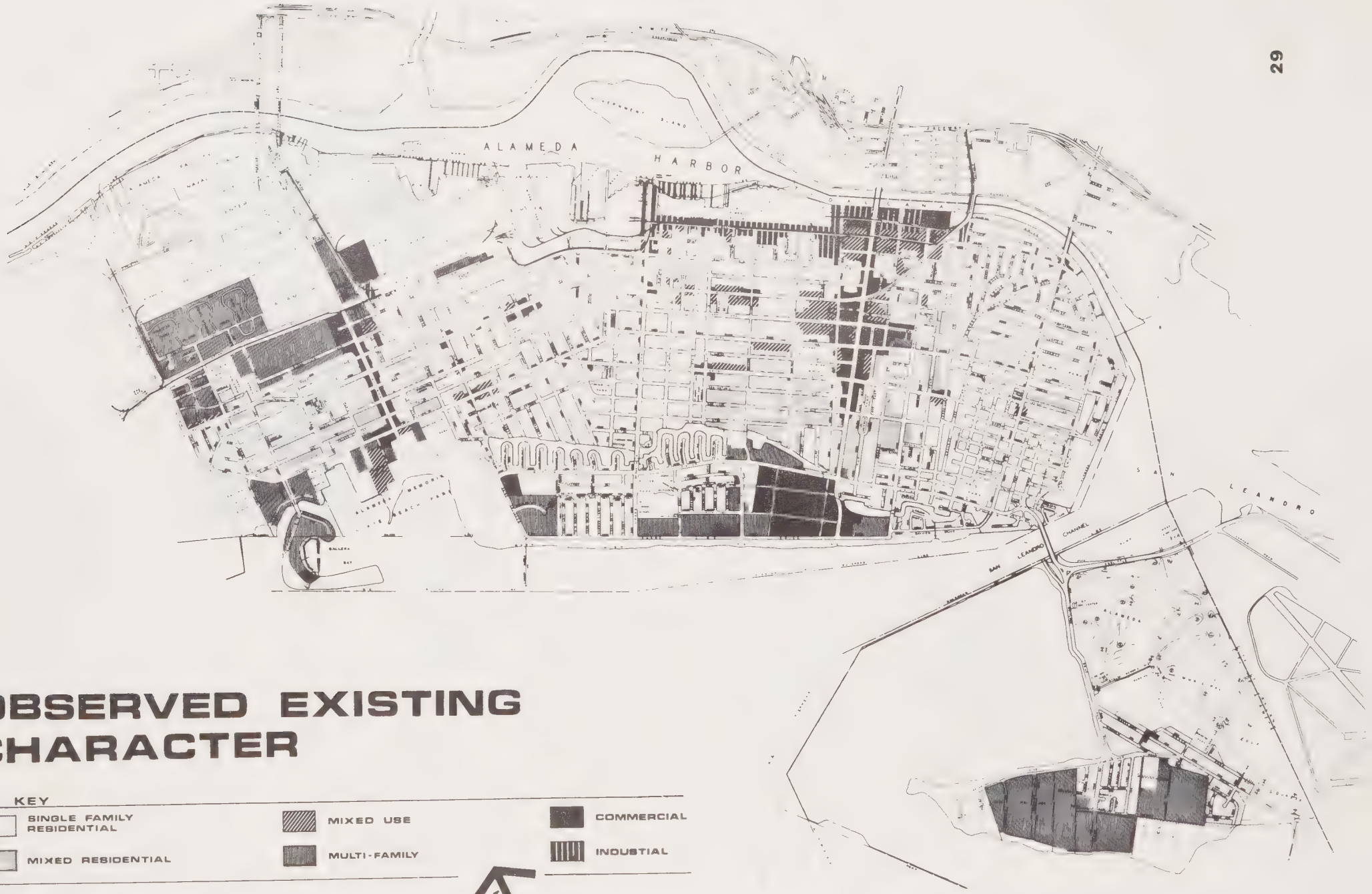
*The Guidelines for the Noise Element are more technical and specific than those for the other elements. They were prepared by the State Office of Noise Control and published in February 1976.

ZONING MAP

5/1/77

R-1 ONE FAMILY DISTRICT
R-2 TWO FAMILY DISTRICT
R-3 RESTRICTED APARTMENT DISTRICT
R-4 NEIGHBORHOOD APARTMENT DISTRICT
R-5 GENERAL APARTMENT DISTRICT
R-6 HOTEL APARTMENT DISTRICT
A-P ADMINISTRATIVE-PROFESSIONAL DISTRICT

C-1 NEIGHBORHOOD BUSINESS DISTRICT
C-2 CENTRAL BUSINESS DISTRICT
C-M COMMERCIAL-MANUFACTURING DISTRICT
M-1 INTERMEDIATE INDUSTRIAL
M-2 GENERAL INDUSTRIAL
PD SPECIAL PLANNED DEVELOPMENT DISTRICT



OBSERVED EXISTING CHARACTER

KEY

- SINGLE FAMILY RESIDENTIAL
- MIXED RESIDENTIAL
- MIXED USE
- MULTI-FAMILY
- COMMERCIAL
- INDUSTIAL

0 1000 2000 4000

SCALE IN FEET

NORTH

1/1/76 fig. 8

General Land Use Issues

Background Information

Both qualitative and quantitative background information on land use was developed in preparing this plan. Data on existing land use include the map of existing land uses for the Main Island (see fig. 9, p. 35), prepared by the Planning Department in the summer of 1975. (see fig. 9, p.35). Because land uses in the City are constantly changing, an attempt was made to update this map in May 1977. Separate maps of existing land use have been prepared for Bay Farm Island and the Estuary (see fig. 31. p. 143 and fig. 35, p. 165).

Estimates of acreage of existing land uses on a block by block basis were developed for the entire City (see Table 22 in the appendix). Planimeter measurements of the large scale maps of existing land use for all parts of the City, which the Planning Department periodically updates, were used to generate this data. Planimeter measurements are only generalized estimates. For large, vacant parcels, whose future use is the most critical to changing land use patterns in the City, an attempt was made to gather more precise data on acreage by comparing planimeter estimates with acreage from assessor's records or owners of the property (see fig. 15, p. 55 and Table 21, p. 240-242).

From the same Planning Department maps, block by block estimates of net residential acreage were also made with a planimeter. Also, the number of dwelling units were counted by housing type. The net acreage estimates and the total number of dwelling units were used to generate estimates of the average net density for each block (see Table 22 in the Appendix). A map of these existing net residential densities was also prepared (see fig. 12, p. 41). Specialized existing land use information was also compiled, such as maps of residential uses in commercial zones and nonresidential uses in R-5 and R-6 Zones in Central Alameda.

Existing zoning districts and other regulations such as Measure A, which presently guide the growth of the City, were examined for their impact on land use. Maps of existing zoning on the Main Island (see fig. 7, p. 27) and Bay Farm Island (see fig. 36, p. 166) are included.

A series of surveys of each block in Alameda was done in December 1975 and January 1976 to establish the basic quality and character of Alameda. Each block was surveyed for three attributes: general character, maintenance and historical character. This kind of information is important in Alameda where the character and appearance frequently diverges from the actual

use as the quantitative data describes it. For example, there are many streets where single-family houses have been converted to apartments. Data indicating that a street has many multi-family dwelling units leaves out the critical fact that the single-family appearance of the street may have been maintained. The planning needs of a street which retains its single-family character are quite different from those of a street where purposely-built apartment buildings have replaced single-family houses.

General Character

The character of each block was categorized as one of the following: single-family residential; mixed residential; multi-family; mixed-use; commercial; or industrial (see fig. 8, p. 29). The criteria in determining the character of a block were the image it presented.

If the houses maintained the appearance of single-family houses, regardless of whether they had been converted to apartments, the block was characterized as single-family. Blocks were described as mixed residential if they had a mixture of single-family houses and multi-family buildings on a block. Mixed-use blocks conveyed the image of a mixture of residential and nonresidential uses. Blocks were defined as commercial or industrial when those uses predominated.

Maintenance

The maintenance on each block was assessed and the block was characterized as either high, medium or low maintenance (see fig. 10, p. 37). Few buildings in Alameda have deteriorated beyond the point where an investment in maintenance could not revive them. The City's 1974 Housing Condition Study isolated deficiencies of older houses, such as inadequate foundations, poor electrical wiring and plumbing. This study indicated that most of the deficiences are remedial, given sufficient maintenance investment.*

Low maintenance indicates a block where several buildings need an investment in maintenance; houses or other buildings have peeling paint, overgrown vegetation, broken windows or fences - sidewalks and streets are not well kept. Medium maintenance describes blocks where one or more buildings suffer from lack of maintenance similar to that found in low maintenance blocks, but the maintenance problem is less serious and pervasive. High maintenance blocks are characterized by good sidewalk and street repair, well maintained and landscaped houses and buildings.

An eyesore survey identifying houses with deteriorated exteriors was conducted by planning staff in 1975 for the City's Housing Element. Comparing the results of the 1975 survey with the 1967 eyesore survey, the majority of the eyesores identified in 1967 had been painted or otherwise renovated by 1975. However, an equal or greater number of houses had become eyesores during the eight year interval.**

Historic Merit

There are a significant number of older blocks and neighborhoods in Alameda that have historic merit due to overall integrity and unity when seen as a whole. This does not necessarily mean that all individual buildings are of historic significance in their own right.

*_Housing Element_, Phase II p. 51.

**_Housing Element_, Phase II pp. 53-60.

Blocks in the City with one or more older buildings were appraised. Blocks were characterized as having either some buildings or being predominantly composed of buildings from historic periods (see fig. 13, p. 46). The term "historic" refers to the whole range of Alameda's older housing and building stock. It includes the City's Victorian and California bungalows, as well as houses and public buildings, in a variety of historical architectural styles, such as the Romanesque City Hall and the modern Alameda Theatre. Blocks which have one or more of these older buildings, but a majority of newer buildings, were described as containing some historic building. If a block had many historic buildings which set the tone for the block, it was categorized as predominantly historic in character.

Residential Areas

Goals Study Issues

The basic thrust of the Community Goals Study is the stabilization of Alameda as a residential community and the protection and enhancement of its existing neighborhoods. This issue and related goals and objectives were addressed by both the Planned Growth and the Housing and Physical Planning Task Force.

Both task forces called for density levels in existing neighborhoods to remain at present levels or to decrease, and for zoning changes which would implement these recommendations. The preservation of the City's attractive older housing stock, possibly through rehabilitation programs, was recommended by both groups. The Housing Task Force emphasized the need for good design quality in new residential buildings. They also placed an emphasis on self-contained residential neighborhoods with public and commercial services located within walking distance. The Planned Growth Task Force recommended that the percentage of owner-occupied, single-family units in the housing stock be increased relative to the proportion of rental units.

The needs of low and moderate-income families were also considered by both task forces. Each group recommended the deconcentration of subsidized housing units within the City's housing stock. The Housing Task Force recommended that new developments provide housing opportunities for a wide variety of age, income, and family-size groups. It was noted that moderately higher density levels, comparable to townhouse condominiums, might be granted in new developments in exchange for inclusion of a proportion of scattered middle and moderate-income housing. It was also suggested that low density, multi-family structures would be acceptable in order to provide housing opportunities for older persons and lower-income families.

Existing Residential Neighborhoods

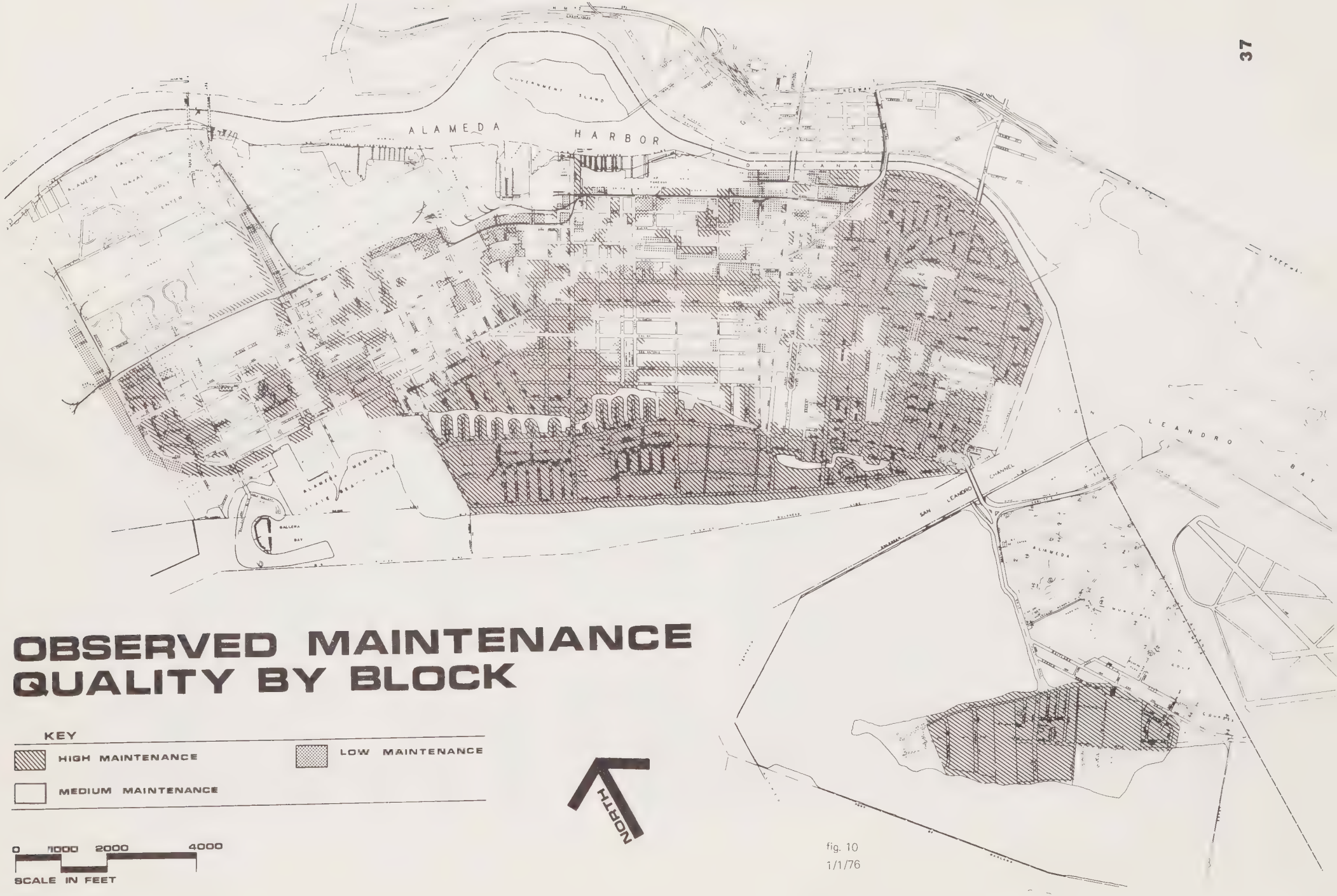
The basic pattern of zoning in Alameda has been one of higher density zoning - industrial, commercial, and multi-family residential - applied to established single-family neighborhoods. The areas specifically zoned for single-family are relatively small. Early zoning maps indicate that this has been a long term trend in Alameda and was reinforced by the 1958 zoning ordinance which established the present zoning boundaries and categories. During the fifteen year period from 1960 through 1974, 73% of the housing units built in the City were multiple-family units.* In 1960, multiple units comprised 35% of the housing stock; by the end of 1974, they

*_Housing Element,_ Phase II, p. 7. Multi-family dwelling units are defined as 3 or more units attached by more than one common wall. Generally, these units share a common entrance and service system. In these calculations, duplexes and townhouses were not considered multi-family units.

EXISTING LAND USE

- SINGLE FAMILY
- TWO FAMILY
- THREE OR FOUR FAMILY
- FIVE OR MORE FAMILY
- NEIGHBORHOOD COMMERCIAL
- GENERAL COMMERCIAL
- COMMERCIAL MANUFACTURING
- LIGHT INDUSTRIAL
- HEAVY INDUSTRIAL
- INSTITUTIONAL PUBLIC & SEMI-PUBLIC
- PARKS
- MILITARY
- VACANT LAND


NORTH
0
1000
2000
4000
SCALE IN FEET



OBSERVED MAINTENANCE QUALITY BY BLOCK

KEY

- HIGH MAINTENANCE
- LOW MAINTENANCE
- MEDIUM MAINTENANCE

0 1000 2000 4000

SCALE IN FEET

fig. 10
1/1/76

had increased to 47%*

The regulations of the multi-family zoning districts have also allowed a very dense pattern of multi-family development to occur in some areas. The apartment district classifications could theoretically allow densities ranging from 22 to more than 60 units per acre. Alameda presently has one of the highest residential densities in the Bay Area; approximately 43.5 people per net acre in 1975.** Of greater concern than simply the number of multi-family structures, has been the construction of multi-family buildings on small, narrow lots that could not provide the open space and other amenities required to successfully incorporate multi-family structures into a neighborhood. Parking problems have resulted from the fact that many older homes were built without garages; and the residents of these homes have been forced to compete with residents of the newer buildings for available on-street parking spaces.

Nonresidential Uses in Residential Areas

There are a number of commercial, industrial, and office uses scattered through residential areas, particularly those which are presently zoned above R-2. There are also a number of areas that are predominately low density residential in use and character, but that are zoned for industrial, commercial, or high density residential use. Most of these areas can be stabilized as residential neighborhoods if they are zoned accordingly and if the incompatible nonresidential uses are phased out.

The industrial uses are the most incompatible with residential areas for reasons of noise and truck traffic generation, odors, fumes, smoke, and appearance, often including low maintenance. Convenient commercial uses are a neighborhood service and an aspect of Alameda's small town character. The office uses are concentrated most heavily in R-5 and R-6 apartment districts where they are allowed by use permit and as a permitted use, respectively. Clustering professional and service functions in consolidated Administrative/Professional rather than allowing them in residential zones, helps to protect the integrity of residential neighborhoods.

Some public facilities, such as public parks, schools, libraries, and fire stations, are important services to residential areas and are generally compatible with residential uses. Certain semi-public uses, such as nursery schools, day care centers, private schools, and churches, are also associated with residential areas. The important consideration is that the necessary detail planning and review be accomplished prior to approval of these facilities for specific sites.

Except for the basically incompatible uses, what makes a service-providing structure compatible within a residential neighborhood is often more a question of design and other performance and location criteria, such as parking, noise generation, etc., rather than use per se.

*Ibid., p. 16.

**_Housing Element_, Phase II, p. 5. By comparison, the same figure for Oakland is 28.8 people/net residential acre; and for San Francisco, 72.6 people/net residential acre.

What is the Effect of Measure A?

Measure A has two components: (1) The Charter amendment, which is the statement that was on the ballot, and passed by Alameda voters in April 1973; and (2) Ordinance 1693 N.S. passed by City Council on June 1, 1973, which defined multi-family units and established the way Measure A would be applied. The Charter amendment states:

> "There shall be no multiple dwelling units built in the City of Alameda . . . exception being the Alameda Housing Authority replacement of existing low-cost housing units and the proposed Senior Citizen low-cost housing complex, pursuant to Article XXV, Charter of the City of Alameda, June 1, 1973."

Ordinance 1693 N.S. defines multi-family units as dwellings which share more than one common wall (Sec. 11-421 [b] and Sec. 11-423[b]).

Residents of Alameda made Measure A part of the City Charter. If at any time they wish to either modify or change this provision, it may be done only by a vote of the electorate.

The effects of Measure A and Ordinance 1693 N.S. will be analyzed by examining their practical application to different types of residential development. This is based on the experience the City has had in applying Measure A and Ordinance 1693 N.S. over the past four years. Potential applications not already experienced will also be examined. The different types of residential development include: (1) Existing Neighborhoods of Mixed Dwelling Unit Types; (2) Existing Large Multi-Family Neighborhoods; (3) Large parcels of vacant land.

Existing Neighborhoods of Mixed Dwelling Unit Types

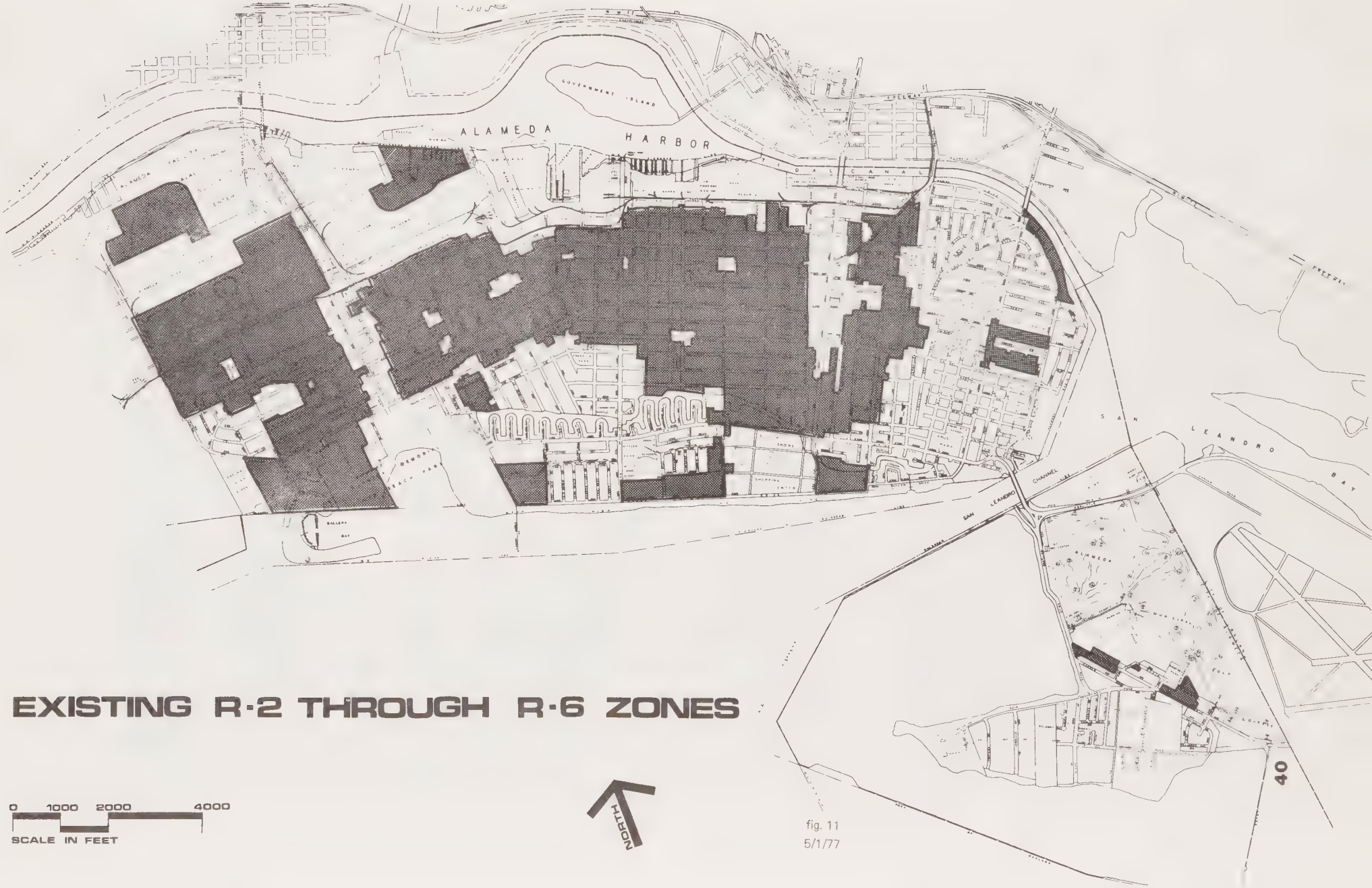
Zoning and Physical Characteristics

There are several older neighborhoods, such as the South Central, Northside, and portions of the East Central, characterized by lots originally designed to accommodate only one dwelling unit, but mostly zoned R-4 (requiring a minimum of 1500 sq. ft. of building site area* per dwelling unit) with some R-3 (requiring a minimum of 2000 sq. ft. of building site per dwelling unit.) One result of this zoning is that some of the older single-family homes were torn down and replaced by multi-unit buildings, generally of three to four units. Some single-family detached units have been divided into two or more units, or have built extra units in the backyard. Many single-family dwellings still remain in single-family use.

Over time, the multi-family units have placed a burden on these neighborhoods. The lots housing multi-family units have less open space than those containing one unit; they generate more traffic per acre than the lots with single-family dwellings; and take up much of the on-street parking. This is aggravated by the fact that many of the lots are less than 50 feet wide. After allowing for one driveway cut, most lots only have one on-street parking space. This is further aggravated by the lack of on-site parking for both the multi-family and single-family units. The multi-family units often present a much different appearance that can drastically alter the character of the neighborhood. Because of the narrow lots, many front yards of multi-family units are devoted almost entirely to hard surface driveways rather than landscaping, and the front of the structures are dominated by garages.

In these mixed neighborhoods, there is a limit to the number of dwelling units a small narrow lot can support. There is also a limit to the amount of traffic and on-street parking a 50 foot wide

*Building site area refers to amount of land available, not the amount of land covered by buildings. See also discussion of Acreage and Density Calculations in Appendix, p. 194.

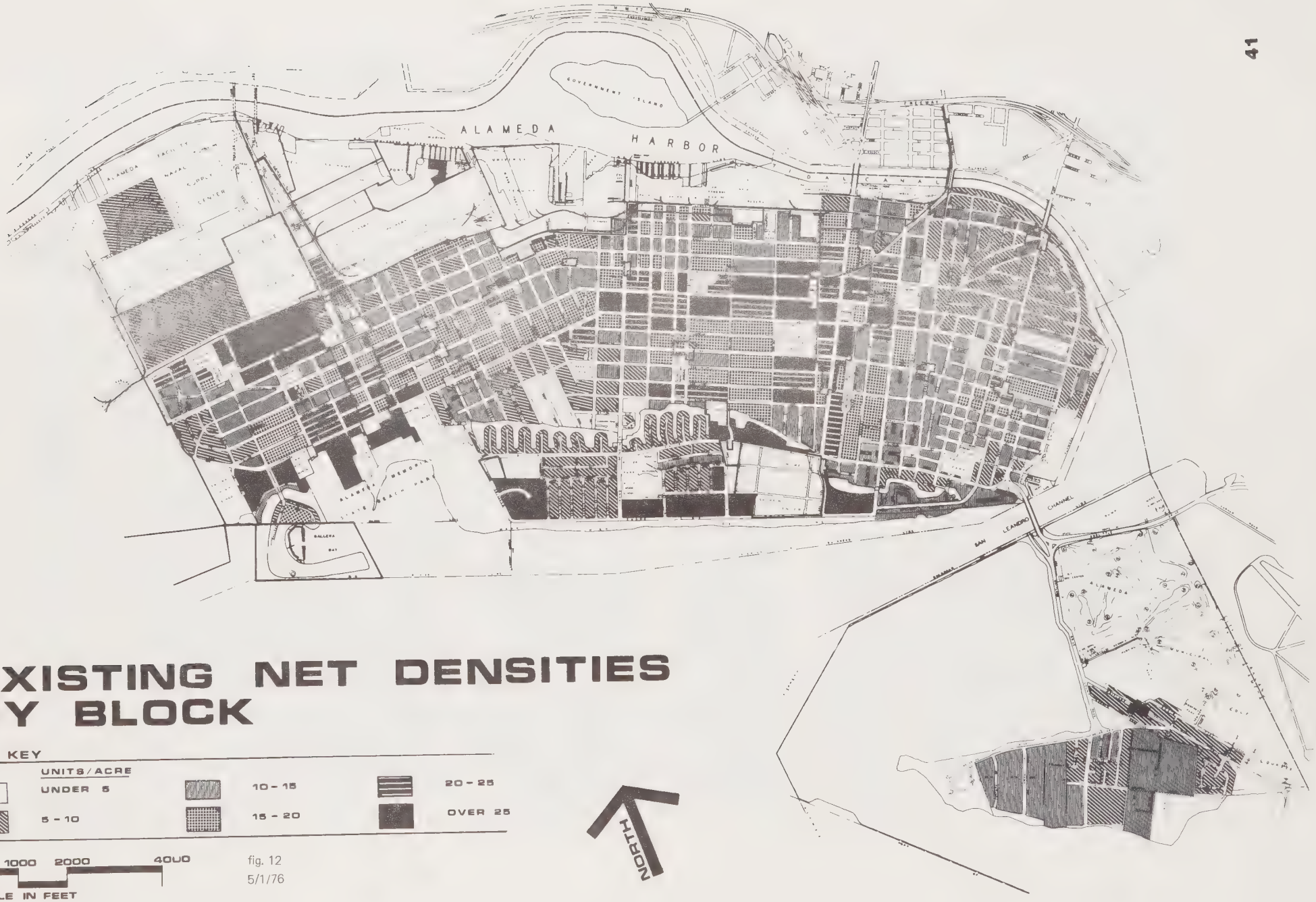


EXISTING R-2 THROUGH R-6 ZONES

0 1000 2000 4000
SCALE IN FEET

NORTH

fig. 11
5/1/77



EXISTING NET DENSITIES BY BLOCK

KEY

UNITS/ACRE

UNDER 5	10 – 15	20 – 25	
5 – 10	15 – 20	OVER 25	

0 1000 2000 4000

SCALE IN FEET

fig. 12
5/1/76

residential street can accommodate. It is clear that the trend toward converting small, narrow lots in single-family neighborhoods had to be curbed.

Effects of Measure A and Ordinance 1693 N.S.

Measure A and Ordinance 1693 N.S. have accomplished this to a point. They certainly prohibit a single-family home from being torn down for the purpose of constructing a tri-plex or four-plex for example, with all the units contained in one building. The language of Ordinance 1693 N.S. does allow multi-family units built before the passage of Measure A to be built if they are destroyed by accident (fire, etc.). If they are destroyed by 70% or less they could rebuild essentially as they were. If they are destroyed by more than 70%, they could rebuild subject to present zoning requirements. This might result in less units than previously existed due to parking and open space requirements that did not exist when the structure was originally built.

Neither Measure A nor Ordinance 1693 N.S. changed the zoning. For example, if a four-plex unit on an 8000 sq. ft. lot in an R-3 zone was destroyed by fire it could be replaced. The zoning would allow the four units to be rebuilt; and, since it was a pre-existing use, the four units could be contained in one building having three common walls.

The situation changes if the same 8000 sq. ft. is vacant, or contains an existing single-family house of one unit the owner wishes to tear down, or an existing multi-family unit the owner wants to tear down. The zoning ordinance still allows a maximum four units on the lot. In reality, it may be difficult to get four units on the parcel and meet all parking and open space requirements, and meet the limitation to one common wall. Three units might be more realistic; with one duplex and one detached unit. A similar situation occurred recently on Santa Clara Avenue where a single-family home was torn down and replaced by four units: two duplexes. This is possible since Ordinance 1693 N.S. does not limit the number of units that can be put on a lot.

Within the provisions of Ordinance 1693 N.S., two units, built within inches of each other, but not sharing a common wall, would still be considered detached units. Such a situation could occur only within a Planned Development. The detailed review a Planned Development receives makes this situation unlikely, but given a tight housing market, attempts may be made to push Ordinance 1693 N.S. to its limit and place the maximum number of units on a parcel.

While Ordinance 1693 N.S. allows the replacement of multi-family units destroyed by fire, earthquake, etc., it does not permit the "as is" replacement of a multi-family unit that is purposefully torn down. In such a situation, the rebuilt units would have to conform to construction of one common wall; the same as with a vacant lot.

In all of the cases discussed above, the new dwelling units would be subject to the Design Review Board process so the rebuilt units might be more compatible architecturally with a single-family neighborhood. However, the existing design standards are very general and the process could be more efficient for everyone with more specific standards - standards that would strive to achieve a single-family appearance on multi-family units.

The next consideration is density. Allowing multi-family units to rebuild at existing zoning allows the problem of overbuilding to continue. Density levels in existing neighborhoods could gradually be brought into line with the capacity of the lots and streets by allowing rebuilt units, but only at a lower density than present zoning would allow. These situations would be limited, but would provide an opportunity to try and make the rebuilt units more compatible with the character and capacity of the neighborhood.

It is possible to change the density controls of the R-2 through R-4 zones so that minimum building site area requirements reflect the limitations of small, narrow lots. For instance, a minimum building site area of 3500 sq.ft. per dwelling unit (or 12.5 du/na) is an acreage figure used by communities in zones which represent the next step in density above R-1. The zones are often characterized by smaller lots containing two or three dwelling units but have many design characteristics of single-family dwellings. These zones often require more open space and on-site parking than traditional multi-family zones. Using the minimum requirement of 3500 sq. ft. of building site area per dwelling unit relates the number of units that can be built to the size of the lot (two dwellings on 7000 sq. ft.; three dwellings on 10,500 sq. ft.) and would still have room to provide adequate parking and open space.

Existing Large One-Family Dwellings

As was pointed out in the Housing Element, Alameda has a few very large older homes on larger lots (many of architectural and/or historical interest) which may now be too expensive to maintain as single-family houses. Some may be large enough to support three dwelling units in the existing structure. A 4000 sq. ft. house on a 10,000 sq. ft. lot zoned R-3 or R-4, might be converted to three or four dwelling units and still meet all the density, parking, landscaping, and open space requirements of the zones.

Neither Measure A nor Ordinance 1693 N.S. directly addresses the issue of conversions of existing houses. The City Attorney has determined that since the language of Measure A regulated units "built," it does not apply to the conversion of an existing house into three or more units. The process is a remodeling without new construction. Also, if the intent of Measure A was to slow down the destruction of the City's older housing stock, the lack of provision for conversions might lead to large single-family homes being removed, so two duplexes could be built on the lot. It is important to note that the number of houses and lots that these circumstances could apply to is very limited.

In the existing neighborhoods discussed here there are three types of development: (1) existing multi-family units that could be rebuilt if destroyed accidentally; (2) existing single-family detached homes on individual lots. Most can only be reasonably used as one-family dwellings, but a few are large enough to be converted into three or more units; (3) vacant lots. This would include lots that previously held single-family, duplex dwellings, or multi-family units that were purposely torn down.

Existing Large Multi-Family Neighborhoods

A different type of multi-family development exists in some areas of Alameda, such as portions of the South Shore, West End, and Central Area. Here there are existing large, multi-family complexes, often covering one block or more. A single building in the complex might contain 10 dwellings or more. The provisions of Ordinance 1693 N.S. regarding rebuilding in the event of accidental destruction apply to these larger apartment complexes the same as they do to the smaller buildings discussed earlier (Sec. 11-421 (g) and Sec. 11-443).

Although the cases would be limited, rebuilding might also occur due to purposeful destruction. This rebuilding would have to conform to the provisions of Ordinance 1693 N.S. Since these complexes occupy some of the choicest acreage in Alameda, rebuilding is a possibility in the future. In any case, when rebuilding occurs, the City has the opportunity to bring developments into compliance with new standards for such things as parking, open space, and building design. The rebuilding could occur at a density in line with the capacity of these larger parcels. In some cases, it might be a lower density than presently allowed.

Preservation of Older Housing Stock

The City's outstanding stock of early period houses - Victorian through the first decades of the twentieth century - is widely recognized as one of its unique attributes. Over a period of years, but particularly in the post World War II era, a great many of the houses have been demolished for new development, or allowed to deteriorate in anticipation of redevelopment. Some of them were of particular architectural or historical significance, such as the ancestral home of the late Senator Knowland on Lincoln Avenue which was demolished in 1970. Most were simply attractive structures with a quality of construction and level of detail that is no longer feasible to produce. As described in the Housing Element,* there were 815 private housing units demolished in Alameda between 1960 and 1974, of which 588, or 72%, were single-family or duplex structures.**

It is a tribute to the strength of Alameda's older housing stock that the damage to the City's basic form and character has not been greater. Surveys of the City have demonstrated that blocks which contained older, well-designed buildings have managed to maintain their single-family character, even where apartment buildings are interspersed (see fig. 18, p. 73).

Decreasing the potential density of residential areas would be a significant step towards protection of these structures. Additional measures are needed, however, if these houses are to be completely assured of preservation, since individual houses or groups of houses could still be demolished for single-family development or the duplex units allowed under Measure A.

Two categories require additional preservation techniques. First are the very large houses which, by present day standards, are no longer economically feasible as single-family dwellings. Many have already been converted to multi-family use. However, some have not and they could provide functional and attractive units for two or more families while still maintaining their exterior single-family character if sufficient controls are applied. This recommendation was made in the Housing Element. The Housing Element also noted that older housing units are the main source of low to moderate-income housing in the City, and should be preserved for that reason.

Another area of concern is the groupings of period structures which have a particular significance as architectural units. These also require special protection if they are to be assured of preservation as a group.

Expanding Housing Opportunities

The City of Alameda Housing Element *** and the Housing Assistance Plan**** have both indicated the large and growing housing needs of Alameda's low and moderate-income households. Despite the approximately 832 households assisted by the Alameda Housing Authority, there were estimated to be 6,307***** lower income households in need in 1976. The need is so much larger than the available resources, and the situation is aggravated by the demand for

*_Housing Element_, Phase II, p. 7.

**These figures discount the 800 units contained in the three major WWII housing projects which were demolished during this period.

***_City of Alameda Housing Element_, Phase III, Febrary 1976.

****The Housing Assistance Plan is part of Alameda's Housing Community Development Act application, and it contains one and three-year housing goals for the City.

***** _Alameda's 1977 Housing Assistance Plan_, Table II.

housing and by the limited supply of vacant land. The Housing Element and the Housing Assistance Plan contain a number of proposals aimed at increasing the supply of low and moderate-cost housing. Several of these are of particular importance in relation to the Combined Land Use Plan.

The Housing Element indicated that the supply of low and moderate-cost units should be increased, and that units should be dispersed throughout the community. The problem is that the market has been unable to produce housing units affordable by low and moderate-income people. There are a variety of ways in which public intervention and public action can aid the market to reduce costs and produce affordable housing.

Two basic techniques have been developed which attempt to incorporate low and moderate-cost units into new developments. The first uses the concept of a density bonus to induce developers to provide moderate-cost housing. The density bonus is usually incorporated into the City's Planned Development regulations so that the provision is voluntary. If the developer initiates a rezoning request, then he is offered the prospect of additional units if he agrees to sell the extra units at, or just above, construction cost.

A second approach is for communities to require that a flat percentage of units in new developments be of low and moderate-cost. This involves the City and the developer in negotiating the cost at which these units will be sold. The developer is asked to bear the reduced profits on these below market price units, and he will attempt to pass the cost on to the housing consumer.

There are a number of problems with these approaches in general and in Alameda's particular case. In general, these approaches do not provide housing for people of low and moderate-income. The developer is profit-motivated and seeks a return on his investment. To make these units affordable by low and moderate-income people requires a deeper subsidy than can typically be provided by these approaches. In addition, these techniques, while they have been tried in a number of cities, have not been very productive or successful. While it can be argued that any additional low-cost units are a net gain, the small numbers so far produced might have been more efficiently produced by another technique. The density bonus system would be difficult to apply in Alameda, where so much of the vacant land is already zoned for Planned Development, thus giving the owner his maximum allowable density. In addition, the proposed new land use categories developed in this Combined Land Use Plan do not incorporate the density bonus concept. Land is designated for the density level considered compatible with the site and the area. To make the density bonus effective might require increases in density beyond the level suitable for the area. These techniques cannot address the needs indicated earlier, but variants of the approach can be utilized to produce greater income diversity in new developments. The City of Davis has a Housing Development Review Board which assesses the desirability of new development against a number of factors, including internal growth needs, economic mix, and other factors. This approach can be implemented through the General Plan.

There are a large number of publicly subsidized programs that would produce rental housing, and a more limited number that would develop owner-occupied housing, but they are not all funded by the Federal government, and not all would work in Alameda. Low-cost owner-occupied housing has been provided by the California Veterans Farm and Home Purchase Program, but they will only give loans up to $43,000 on properties valued up to $53,000. The Federal Section 235 Program offers subsidized 90% mortgages to low-income households, but the program is only applicable to new, or substantially rehabilitated, houses with a mortgage limit of $29,000 for houses with three bedrooms or less. For houses with four or

OBSERVED HISTORICAL AREAS BY BLOCK

KEY

PREDOMINANTLY HISTORICAL CHARACTERISTICS

SOME HISTORICAL BUILDINGS

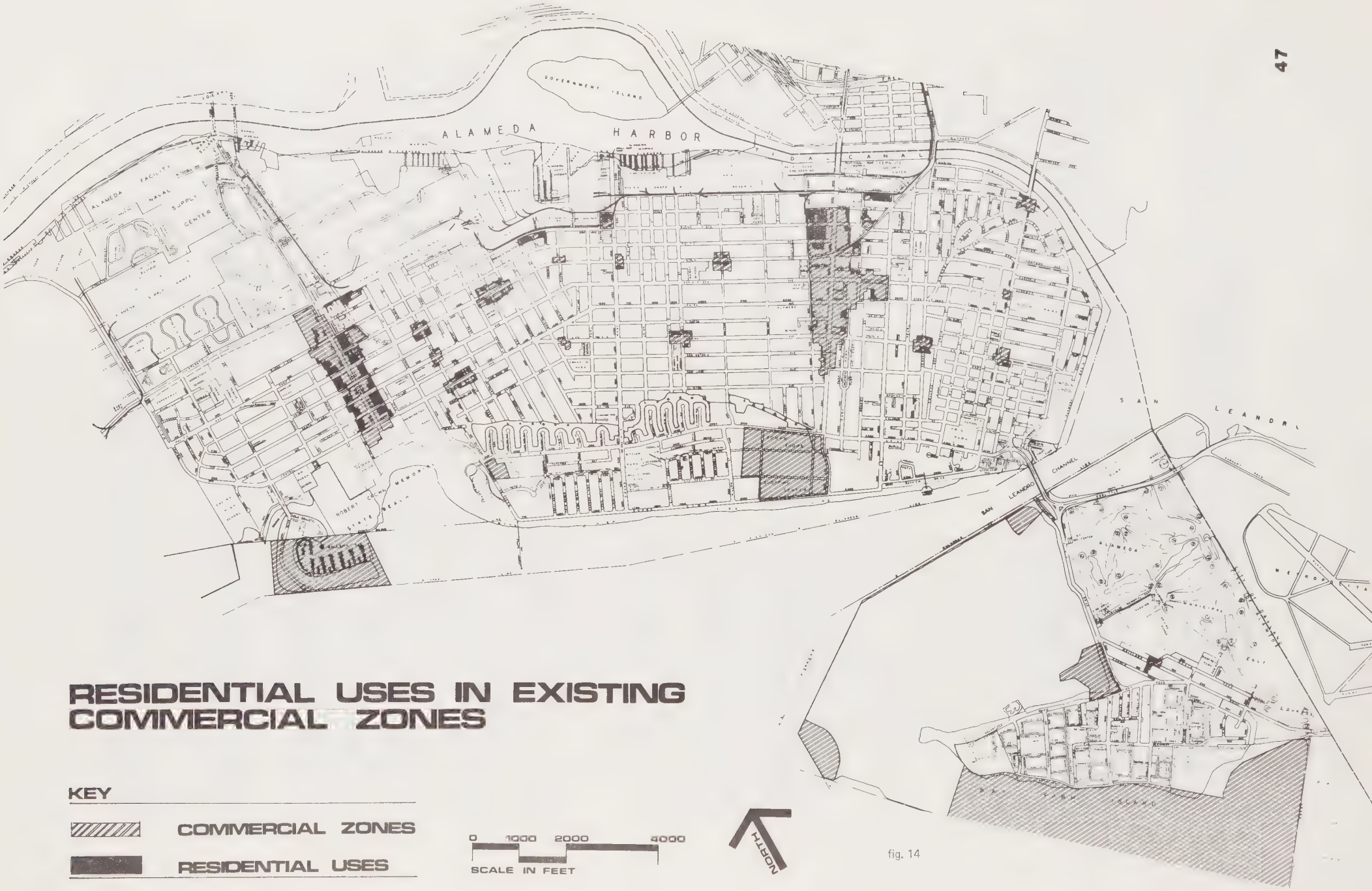
0 1000 2000 4000

SCALE IN FEET

NORTH

fig. 13

1/1/76



RESIDENTIAL USES IN EXISTING COMMERCIAL ZONES

KEY

COMMERCIAL ZONES

RESIDENTIAL USES

fig. 14

more bedrooms, and for households of five or more people, the mortgage limit can be increased to $45,000. However, in its present form, the Section 235 Program is of little value in Alameda since few houses sell at or below $35,000.

The Cal-Vet Program is of value, but not everyone in housing need is a veteran. The Federal Government is contemplating increasing the mortgage limit on Section 235 to $60,000 with an interest rate of 3%. If and when this occurs, the program should be reevaluated for possible use in Alameda.

Other possible approaches involve the purchase of land and the development of low-cost housing using federal mortgage and rent subsidies to reduce development costs and rents. The feasibility of this type of approach is currently being evaluated as part of Alameda's Housing and Community Development Act application. The precise mechanisms used in the approach vary by area, by funding source, and by other local constraints. However, the result is typically a low-cost rental or cooperative development. Given a more stable flow of federal funds, this approach might be utilized in most areas of Alameda.

Article XXXIV

Article XXXIV of the State Constitution provides that:

> "No low-rent housing project shall hereafter be developed, constructed, or acquired in any manner by any state public body until a majority of the qualified electors of the city, town or county, as the case may be, in which it is proposed to develop, construct, or acquire the same, voting upon such issue, approve such project by voting in favor thereof at an election to be held for that purpose, or at any general or special election."

Article XXXIV had been interpreted to mean that traditional low-rent public housing projects, financed by long term government bonds, and constructed by a housing authority, required referendum approval of local voters.* However, the recent decision by the California Supreme Court in the State Housing Finance Agency's bond validation lawsuit extended the definition of Article XXXIV to include projects where the State provided financing to a private sponsor. This decision extended the impacts of Article XXXIV, yet left unclear what level of public involvement would trigger the referendum requirement.** Article XXXIV may therefore act as a constraint on the development of additional low-rent housing in Alameda.

Commercial Areas

Goals Study Issues

Several task forces of the Community Goals Study addressed the City's commercial areas. They felt these areas were neither used to their full potential nor provided the range of services people desired. Both the Economic Development and the Housing and Physical Planning Task Forces commented on the need to make these areas more attractive. The Economic Task Force called for landscaping of commercial areas.

*California Low and Moderate-Income Housing Laws. Institute for Local Self-Government, March 1975, pp. 42-54.

**State of California Department of Housing and Community Development, "Memorandum of Law: Article 34 Implications in Land Write Downs by Public Agencies," March 2, 1977.

The Housing and Physical Planning Task Force felt commercial areas were so scattered and dispersed that they adversely affected their own image and that of residential areas around them. It recommended limiting the size of commercial areas to well-defined areas and minimizing their impact on surrounding neighborhoods.

Task forces, particularly the Economic Development Task Force, stressed the potential for new revenue to the City and new recreational opportunities that commercial development of the undeveloped waterfront areas could create. The Economic Development Task Force discussed the desirability of having waterfront areas developed as mixed use areas, with commercial, residential, recreational, and marine related industries.

Size of Commercial Zones

Commercial zones in Alameda have generally been logically located. Both central business and neighborhood commercial zones are distributed so as to provide convenient service to most of the City's residential neighborhoods and have not blended together in a commercial sprawl. However, these zones (C-M, Commercial Manufacturing; C-2, Central Business District; and C-1, Neighborhood Business District) cover large areas in the older sections of Alameda (see fig. 7, p. 27). Many of these commercial zones are much larger than the commercial areas themselves and include surrounding residential areas (see fig. 14, p. 47). Frequently, there are no clear and strong boundaries between commercial and residential areas in the commercial zones. Thus, residential neighborhoods risk intrusion of commercial uses.

Large commercial zones were generally created with the expectation that commercial areas would expand. The growth of competing shopping centers, South Shore and Fernside, and easy accessibility to major shopping areas in Oakland, have drained much of the economic vitality from older commercial areas. With such large commercial zones, whatever commercial expansion and growth is taking place is dispersed instead of focused on injecting new life into existing commercial areas.

There has been little demand for commercial use of most of the residential properties in these zones. Residential uses, primarily single-family houses, remain either at the edges or scattered between commercial properties.

Commercial zoning has a deteriorating effect on these residential properties. Under existing commercial zoning, free standing houses are nonconforming uses; this limits remodeling of these buildings. Also, owners of houses in commercial zones often allow them to deteriorate, speculating on commercial development of the property, and that commercial development would most often involve new, nonresidential structures.

Surveys of commercial zones indicate they are generally lower in maintenance than surrounding residentially zoned areas (see fig. 10, p. 37). Over time, low maintenance tends to spread, and threatens adjacent residentially zoned areas. Though maintenance is a problem, the housing in commercial zones is generally still in sound condition or capable of renovation. Some are of historical architectural interest (see fig. 13, p. 46). These houses sometimes fill a City-wide and regional need for moderate-cost housing. They are more likely to be maintained or renovated if they are located in stable residential areas.

Housing in Commercial Areas

One of the issues of this plan is the compatibility of different land uses. Presently, housing is permitted in C-1 zones and C-2 zones (subject to a use permit and only within a structure used

partially for commercial purposes). Otherwise, residential uses in commercial zones are nonconforming. Even if commercial zones were made smaller, free standing housing would still be scattered among commercial properties in existing commercial areas. Its present status as a nonconforming use could have a blighting influence.

The issue is not simply preventing deterioration of existing housing in commercial areas. Housing can make a positive contribution to commercial areas. It allows people to walk easily to shop and, in some cases, to work. Housing within commercial areas increases the choice of living environments available within Alameda. New housing in existing commercial areas could even be encouraged. Marinas along the shoreline, for example, might be suitable sites.

Neighborhood Business District

Neighborhood business district zones are generally well located to serve residential areas. The small, independently owned operations, such as grocery stores, laundries, and barber and beauty shops, contribute to the City's small town atmosphere and sense of community. The major problems with these areas are that the area zoned for commercial use is often too large and includes part of the surrounding residential area, leading to the problems discussed previously. Large signs can also be a problem. Signage at a neighborhood scale is important. The zoning regulations can be structured so that any truly incompatible uses are eliminated and basically compatible ones are properly controlled.

Central Business District

The C-2, Central Business District zone in older areas has problems similar to other commercial zones; excessive size, nonconforming use status of housing, medium maintenance. With C-2 areas, drive-in restaurants and other drive-in establishments undermine the pedestrian orientation needed to create active central business districts and, instead, give these major shopping areas an auto-orientation. The increase in chain stores and restaurants in these zones tends to draw patronage and economic vitality from smaller, local merchants. Newer areas which have developed under C-2 zoning, such as South Shore Center, have different needs and problems from older C-2 zones, yet are controlled by the same regulations.

Commercial-Manufacturing District

Both the location and combination of uses permitted by the present Commercial-Manufacturing District have created problems. The Commercial-Manufacturing District permits both general commercial and light manufacturing uses, such as used car lots, automobile repair shops, and warehouses. There are not adequate provisions to insure compatability between uses. Particularly vulnerable are existing retail-commercial and residential areas within C-M zones. Many of the uses contain outdoor storage yards and work areas which can have a downgrading influence on residential and retail commercial areas. The zoning allows no residential uses, so all residences are nonconforming with the attendant problems mentioned above.

The two older, major business areas, Park Street and Webster Street, are zoned combinations of C-2 and C-M zoning. The C-M zones are located at the north ends of these commercial areas, two of the major entrances to the City. Locating C-M zones at the City's entrances, with their outdoor storage and work areas, creates a negative and confusing first impression. In addition, the types of manufacturing uses found in these zones are not consistent with creating active, central commercial areas in the Park and Webster Street business districts.

The Goals Study Task Force on Housing and Physical Planning called for simplification of the zoning categories. The uses now permitted in the Commercial-Manufacturing District could be

included in other land use categories. There are certain land uses (a light manufacturing plant with some retail facilities, for instance) which can be characterized as commercial-manufacturing uses. However, most of these uses are now found within Industrial M-1 or M-2 districts, rather than C-M districts (see fig. 9, p. 35). The areas now zoned C-M could be designated industrial, commercial or residential, depending on their existing land use and location.

New Commercial Areas

It is difficult to determine precisely how much undeveloped land should be designated for commercial use. It depends on how many commercial facilities could be supported by existing residents, new residents, and people from outside the City. This in turn depends on the range and quality of commercial services which are developed.

The circulation network and the restrictions in other General Plan elements, such as the Noise and Airport Safety Elements, place some limits on new commercial development.

Although the conflict between new commercial developments and existing districts will continue, a compromise can be attempted. The historial approach of zoning large areas commercial with the intent of encouraging commercial expansion has not been successful. It has not resulted in either revitalizing older commercial areas or attracting the range of commercial services Alameda citizens may desire in the newer shopping centers. New commercial development can compliment existing commercial areas by providing different services rather than duplicating old ones. Since most of the City's undeveloped land is along the shoreline, a greater water orientation in new commercial development could be encouraged. A wider range of commercial services will be needed on Bay Farm Island where existing commercial facilities are very limited.

Industrial Areas

Goals Study

The Economic Development and Planned Growth Task Force of the Community Goals Study were concerned by the amount of undeveloped industrially zoned land in the City. They stated these areas should be developed in ways which created a more stable and beneficial economic environment in the City and improved the appearance and recreational use of these lands.

The Economic Development Task Foce specified that new industrial development in the City should be environmentally sound and aesthetically pleasing light industry. This task force observed that new heavy industry is not desired by the City's residents.

Size of Industrial Zones

Alameda's industrial areas provide jobs in close proximity to housing, allowing people the opportunity to live close to their work. Industries keep Alameda from becoming an exclusively bedroom community. They contribute to the City's tax base. Though people may find the industries along the Estuary unattractive, they emphasize Alameda's historic function as a port and site of water-oriented industry. They also contribute to the visual diversity of the City. Industrial areas are characterized by large, bulky forms, the cranes along the Estuary for example, which contrast with the smaller scale of the rest of the City.

The problems with industrial lands uses are: the size and location of industrial zones and the limitations of existing industrial zoning categories. Industrial zones cover large areas (see fig. 7, p. 27). Existing industrially zoned areas include government lands and most of the land along the Estuary between the Miller-Sweeney Bridge and the Tubes. These areas are zoned M-1, Intermediate Industrial, M-2, General Industrial. Moving away from the water, the zoning becomes C-M, a mixture of commercial and industrial uses. There is also a 330 acre area zoned CM-PD on Bay FArm Island. (See Bay Farm Island Section.)

The demand for new industrial and manufacturing areas in Alameda is now slight. There has not been much of an increase in industrial uses recently. At least part of the reason is poor access to industrially zoned areas. Much of the industrially zoned land, especially within the M-2, General Industrial District, is vacant. Where developed areas are zoned industrial, a great deal of residential and commercial uses remain. In some areas, these residential and commercial uses dominate.

Location of Industrial Zones

The location of industrial zones is also an issue. The entrances to the island at both Park and Webster Streets are zoned industrial (see fig. 7, p. 27). Though industries along the Estuary are visually interesting, the mixture of manufacturing and commercial uses presents a cluttered and confusing entry to an essentially residential community.

The industrial zoning along the Estuary reflects the historic water orientation of this area, but water access is no longer necessary for many industries. The railroads and proximity to the Nimitz Freeway are now more important transportation connections.

The Estuary is an areas that is valuable for other uses. The demand for commercial, residential, and recreational land along the waterfront is increasing. The mixed use developments by the Port of Oakland on the Oakland side of the Estuary indicate this. They also improve the view from the Alameda side of the Estuary and make it a more attractive area for a wider range of uses.

Several industrial zones which presently contain some industrial uses are located adjacent to residential areas in the Northside and West End. Sufficient buffers to protect the residential neighborhoods from the noise, traffic, and visual impact of these industrial areas have not been provided.

Industrial Zoning Districts and Regulations

The existing industrial district regulations, M-2, General Industrial District, and M-1, Intermediate Industrial District, are not adequate as controls or standards for industrial development. For example, district regulations provide for no minimum lot size and allow 80% lot coverage. Existing industrial areas have little landscaping and often contain cluttered, outdoor storage and exposed mechanical equipment.

Adequate buffering for nonindustrial, particularly residential, land uses in the surrounding areas is not provided under the existing regulation. Both landscaped buffers and transitions in industrial environments can be used to protect surrounding land uses from the impacts of industrial land uses. Light industrial uses in enclosed buildings within a light industrial park setting would be more suitable near residential areas. Land consumptive, outdoor oriented industrial uses are more suitable in industrial areas separated from residential areas.

There is no existing industrial zone which provides the type of regulation needed to develop the attractive light industrial areas the Goals Study Task Forces desired. Both the C-M and the M-1, Intermediate Industrial District Regulations, are inadequate. Neither provides enough regulation of light industrial uses to create attractive, light industrial areas.

Solid Waste Facility

The City is examining the prospect of a solid waste reclamation project which would include energy generation. The possible locations for a generating plant are currently under study. The location and design should be compatible with the other General Plan objectives. Areas designated as industrial zones would be the most appropriate for this generating facility.

Mixed Use

Introduction

The previous sections have discussed compatible uses within the various single use land use categories, the types of land use mixtures which are workable, and those which have not proven successful. The previous discussions and the recommendations for single land use categories would only permit a limited mixture of land uses within areas. Areas would be predominantly devoted to one use, either residential, commercial, or industrial.

There are certain parts of the City, particularly along the waterfront, which contain a mixture of commercial uses, and even some light industrial uses, where it may be desirable to allow new residential to be added. The recommendations for commercial areas would only permit existing residential in commercial areas to remain, but no new housing to be built. While this is valid in most cases, since all commercial areas are not suitable for new housing, new housing could be valuable in certain areas. Allowing new housing in specified areas, such as along the shoreline, would increase the range of residential environments in the City and allow more people to live near the water and near employment.

More self-sufficient areas can be created by allowing a mixture of uses in new developments. Once an area has been deemed appropriate for mixed use, a developer can respond to the needs of the market, rather than the often narrow limits of uses allowed in a single zoning classification. Sometimes there is property located in an older area that might not be marketable for just housing because of its proximity to nonresidential uses. The market may not support an office park or shopping center alone. Put the uses together on the same site and the picture changes. The potential for interaction among the uses comes into play.

Mixed use development can take many forms, ranging from a vertical mixing of interrelated land uses in a single structure that might encompass a whole city block to a coordinated set of complimentary buildings and uses that can extend over 50 acres or more. The ideal mixed use project would provide the opportunity for a person to live, work, shop, and recreate without needing a car and would be built at a human scale that emphasizes the pedestrian. A lively living and working environment can be created in a mixed use development, as well as an efficient use of facilities and services.

The Urban Land Institute defines mixed use as a "relatively large scale real estate project characterized by:

The City as a whole has an ultimate holding capacity (expressed in peak hour trips - see Circulation Section), due largely to the limited excess capacity of the bridges and tubes. In addition to factors mentioned above, the ability to accommodate additional development is also limited to the City's financial ability to support the services new development demands.

The present zoning of the City, without Measure A, could allow a population, at ultimate development, that may be far beyond the capacity of the City's present circulation system.

PUBLICLY OWNED UNDEVELOPED LAND

	Acres	Owners
A	1.18	City of Alameda
B	3.08	U. S. Government
C	2.24	U. S. Government
D	5.20	Alameda Unified School District
E	2.17	City of Alameda
F	8.54	City of Alameda
G	11.50	City of Alameda
H	1.80	Alameda Unified School District
I	0.83	City of Alameda
J	2.98	Alameda Unified School District*
K	7.65	City of Alameda
L	2.02	City of Alameda

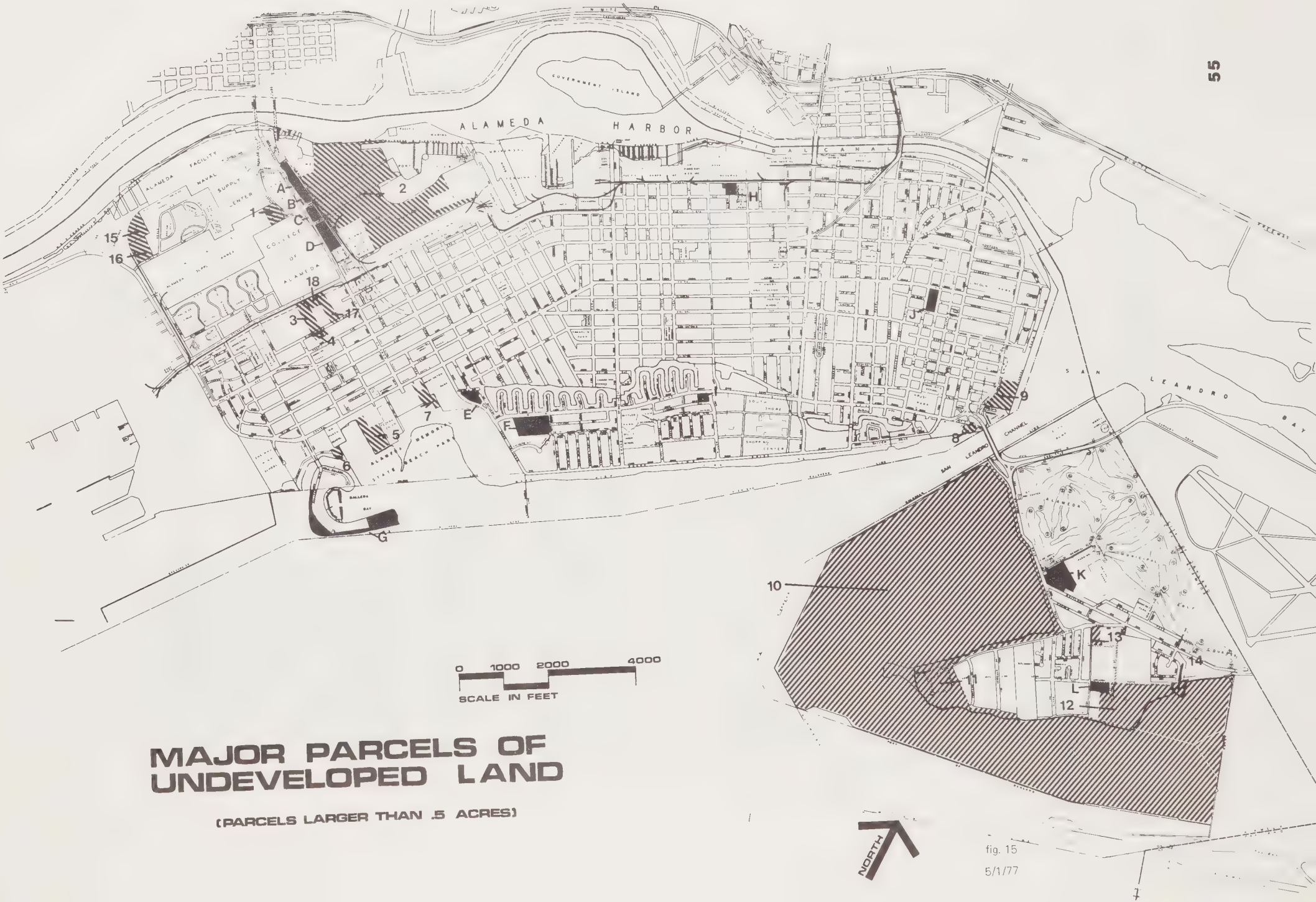
PRIVATELY OWNED UNDEVELOPED LAND

	Acres		Acres
1	3.65	10	915.00
2	109.81	11	16.48
3	2.6	12	32.60
4	0.69	13	3.50
5	9.22	14	0.94
6	2.80	15	5.07
7	2.76	16	5.17
8	1.13**	17	5.5
		18	0.6

* Has been vacated upon completion of new Lincoln School

** This parcel has developed since the initial survey was done. Only a small area remains vacant.

Source: Map of City Properties; revised 10/79
City of Alameda Assessor's records
Table 21 ; Acreage of Non-Residential Land Uses



MAJOR PARCELS OF UNDEVELOPED LAND

(PARCELS LARGER THAN .5 ACRES)

fig. 15
5/1/77

1. Three or more significant revenue-producing uses (such as retail, office, residential, hotel/motel, and recreation - in which well-planned projects are mutually supporting);

2. Significant functional and physical integration of project components (and thus a highly intensive use of land), including uninterrupted pedestrian connections; and

3. Development in conformance with a coherent plan (which frequently stipulates the type and scale of uses, permitted densities, and related items)."*

A certain flexibility of permitted uses is helpful, but within a clearly defined framework which prevents any single use from becoming dominant. The types of uses which could be permitted include residential, commercial, both retail and offices, and open space. Certain on-site services are also important within a mixed use area: day-care centers, even private and/or public schools, as well as dry cleaners, laundries, barber and beauty shops, and grocery stores and pharmacies. Some industrial uses could successfully be mixed with these uses - offices or research oriented light industries or marine related industries in a waterfront mixed use area, for example. However, industrial uses which generate significant amounts of heavy traffic would be inappropriate in a mixed use area which includes residential uses. That type of industrial use is more suitable in a separate light industrial area.

It is important that land uses be intermingled within mixed use areas rather than segregated on different parts of the site. If a true mixed use area is to develop, then pedestrian circulation would have to be geared for walking between areas. An overall master plan for development approved by the City before development begins helps to integrate the proposed groupings of uses in a viable and compatible mix.

Undeveloped Land

Alameda contains about 1175 acres of undeveloped land. Most of the vacant parcels are 10 acres or less and many are along the shoreline (see fig. 15, p. 55). There are many objectives people desire to fulfill through development of this land. Creating new housing and commercial facilities, improving the City's tax base, and developing new open space and recreational opportunities along the shoreline are a few mentioned by the Goals Study.

What can be developed in these areas depends on several factors: the location of the land and adjacent uses; the needs and priorities of the community; the market demand, the available public and private economic resources; and constraints such as airport noise or safety. In addition, the holding capacity of undeveloped parcels must be evaluated, particularly for very large parcels. The holding capacity of a parcel is determined by the availability of public facilities such as parks, schools, sewers, and streets. For example, traffic analysis has demonstrated that the Pan Pacific property along the Estuary could accommodate no more than 1500 dwelling units if the entire project was residential, due to limited traffic capacity in the tubes, (see Estuary Section). (The impact on traffic of various mixtures of uses is discussed in the Estuary Section.) A similar analysis might have been made for the Harbor Bay Isle property, but the settlement agreement established, in effect, a holding capacity of 3200 units.

*Mixed Use Developments: New Ways of Land Use (Technical Bulletin 71, the Urban Land Institute, Washington D.C., 1976), p. 6.

General Open Space Issues

Background Information

Information on existing open space was gathered from the City's Department of Parks and Recreation and the Alameda Unified School District. Data concerning size, activities, facilities, and use of existing park and recreation areas was compiled (see Table 1, p. 59). Estimates of the amount of open space associated with schools and the types of facilities contained in this open space were generated (see Table 25, pp. 250-251). Park, recreational facility, and school open space were characterized as neighborhood, community, or regional, and the acreages for these categories developed (see Table 25, pp. 250-251). A map of existing public schools and parks was prepared to show the distribution of these facilities in the community (see fig. 16, p. 60). Finally, a breakdown of the residential density and the total acreage, and acreage per 1,000 population of open space was produced on a neighborhood by neighborhood basis (see Table 2, p. 63).

Alameda's existing park and recreation areas were surveyed and evaluated as public spaces (see Table 3, p. 64). Several criteria were used. Three - vegetation, maintenance, and aesthetic appeal - evaluated the general attractiveness of the area. The criteria, visibility as open space in the neighborhood, determined how well the open space provided visual relief and openness to the neighborhood around it. Finally, the accessibility by auto and pedestrian was assessed. An area is given a poor rating for pedestrian accessibility if it is necessary to cross heavily traveled streets to reach it from the surrounding neighborhood.

Also, surveys were done of existing shoreline access areas (see fig. 18, p. 73, and the discussion under Shoreline Open Space) and undeveloped shoreline areas. Descriptions of undeveloped shoreline areas are contained in the Bay Farm Island and Estuary Sections of the report, respectively.

Goals Study Issues

The Planned Growth Task Force had as a goal giving high priority to the provision of open space at the local neighborhood level, including local parks, playfields, and mini-parks. Several task forces, Economic Development, Planned Growth, and Recreation and Cultural Facilities, discussed the need for more open space, particularly for recreation, along the

shoreline. The Planned Growth Task Foce states that all areas touching on waterways should become public domain or provide public access.

Increasing the types of available open space was requested. The Recreation Task Force encouraged the use of vacant land for cooperative gardening, mini-parks, and nature studies. The Planned Growth Task Force had as one of its goals increasing the number of trails, walks, and paths for hiking, jogging, walking, and bicycling.

Finally, increasing the uses of open space was discussed. The Planned Growth Task Force had several goals involving the use of open space to structure urban form. It urged Alameda to obtain open spaces which provide visual amenity, such as green belts, open fields, and lagoons.

The Task Force also wanted the City to increase the amount of open space used to shape and guide community development, provide separation between conflicting land uses, and provide neighborhood, district, and City identity.

Introduction

Open Space can be defined as any land or water which is not built upon and not used for motor vehicle circulation, ranging from vacant lots to front yards, to parks, to the San Francisco Bay. This plan focuses on the purpose open space serves for public recreation; structuring and containment of urban form; conservation of natural resources; public health and safety; and managed production of resources. Open space is not merely the left-over gaps between built up areas.

Open Space for Recreation

Recreation is the open space function which has been given the greatest emphasis in Alameda. Most publicly owned open spaces - parks, special recreation facilities, and playgrounds - have outdoor recreation, both passive and active, as their major and primary purpose. The recreation facilities of these open spaces are heavily used (see Table 1, p. 59).

Neighborhood and Community Identification

Open space for recreation is usually classified according to the area it serves, its size, and the types and range of its facilities. Generally, parks less than 5 acres are neighborhood parks, designed to serve residents in the immediate area. Table 1 on page 59 shows that neighborhood parks can be primarily passive (restful open spaces that are not programmed for a particular active use). They can also accommodate a sports field or court, a playground, and picnic area. Community parks all have several active recreation facilities. Some of them have facilities, like a lighted baseball field with stands or lighted tennis courts, that may be unique in the community.

Another way of illustrating the difference is to liken them to elementary schools, which are neighborhood facilities, vs. high school or junior highs, which draw from a larger area of the City. Recreation facilities existing as separate entities (such as the swim center and the boat ramp) are oriented toward the whole community.

Size and Distribution of Recreation Open Spaces

There are several standards for determining the adequacy of the acreage and distribution of a city's recreational open spaces: service radius, aggregate acreage, and acreage at the neighborhood and community level.

	TYPE OF PARK						SIZE					ANNUAL USE					ACTIVITIES									FACILITIES (& SERVICES)					
	NEIGHBORHOOD PARK PASSIVE	NEIGHBORHOOD PARK ACTIVE	COMMUNITY	REGIONAL	SPECIAL ACTIVITIES	LESS THAN 1 ACRE	1 TO 5 ACRES	5 TO 10 ACRES	10 AND MORE ACRES	LESS THAN 5,000	5,000 TO 10,000	10,000 TO 50,000	50,000 OR MORE	FISHING	SWIMMING	GOLF	ATHLETIC FIELDS	ATHLETIC COURTS	PLAYGROUND	PICNICKING	SPECIAL ACTIVITIES	SUPERVISION	RESTROOMS	PARKING	COMMUNITY CENTER	CONCESSIONS
ALAMEDA MUNICIPAL GOLF COURSE				●	●				●				●			●						●	●	●		●
ALAMEDA SWIM CENTER					●	●							●		●							●	●			
BAY FARM RECREATION CENTER					●		●					●											●	●	●	
BOAT RAMP					●		●			●													●	●		
EDISON PLAYGROUND	●	●				●					●							●	●			●	●			
ENCINAL SWIM CENTER					●	●							●		●							●	●			
FRANKLIN PARK	●	●	●				●					●					●	●	●	●		●	●		●	
GODFREY PARK	●	●	●				●										●	●	●	●		●	●		●	
JACKSON PARK	●						●													●			●			
KRUSI PARK	●	●	●					●				●					●	●	●	●	●	●	●		●	
LINCOLN PARK	●	●	●					●				●					●	●	●	●	●	●	●	●	●	
LONGFELLOW PARK		●	●				●					●						●	●	●		●	●		●	
McKINLEY PARK	●	●					●				●						●	●	●	●		●	●		●	
MODEL AIRPLANE FIELD					●	●				●										●	●	●	●	●		
BUENA VISTA PARK	●	●	●				●										●	●		●		●	●		●	
RITTLER PARK		●					●					●					●					●	●			
WASHINGTON PARK	●	●	●	●					●			●	●				●	●	●	●		●	●	●	●	●
WOODSTOCK PARK	●	●	●				●					●					●		●	●	●	●	●	●	●	

SOURCE: INVENTORY, CLASSIFICATION AND EVALUATION OF EXISTING OUTDOOR RECREATION AREAS AND FACILITIES, CALIFORNIA DEPARTMENT OF PARKS AND RECREATION, COMPLETED BY THE CITY OF ALAMEDA DEPARTMENT OF PARKS AND RECREATION. JULY 1975 AND SURVEYS OF PARK CHARACTER MARCH 1976

Table 1

5/1/76

EXISTING CITY PARKS AND RECREATION AREAS

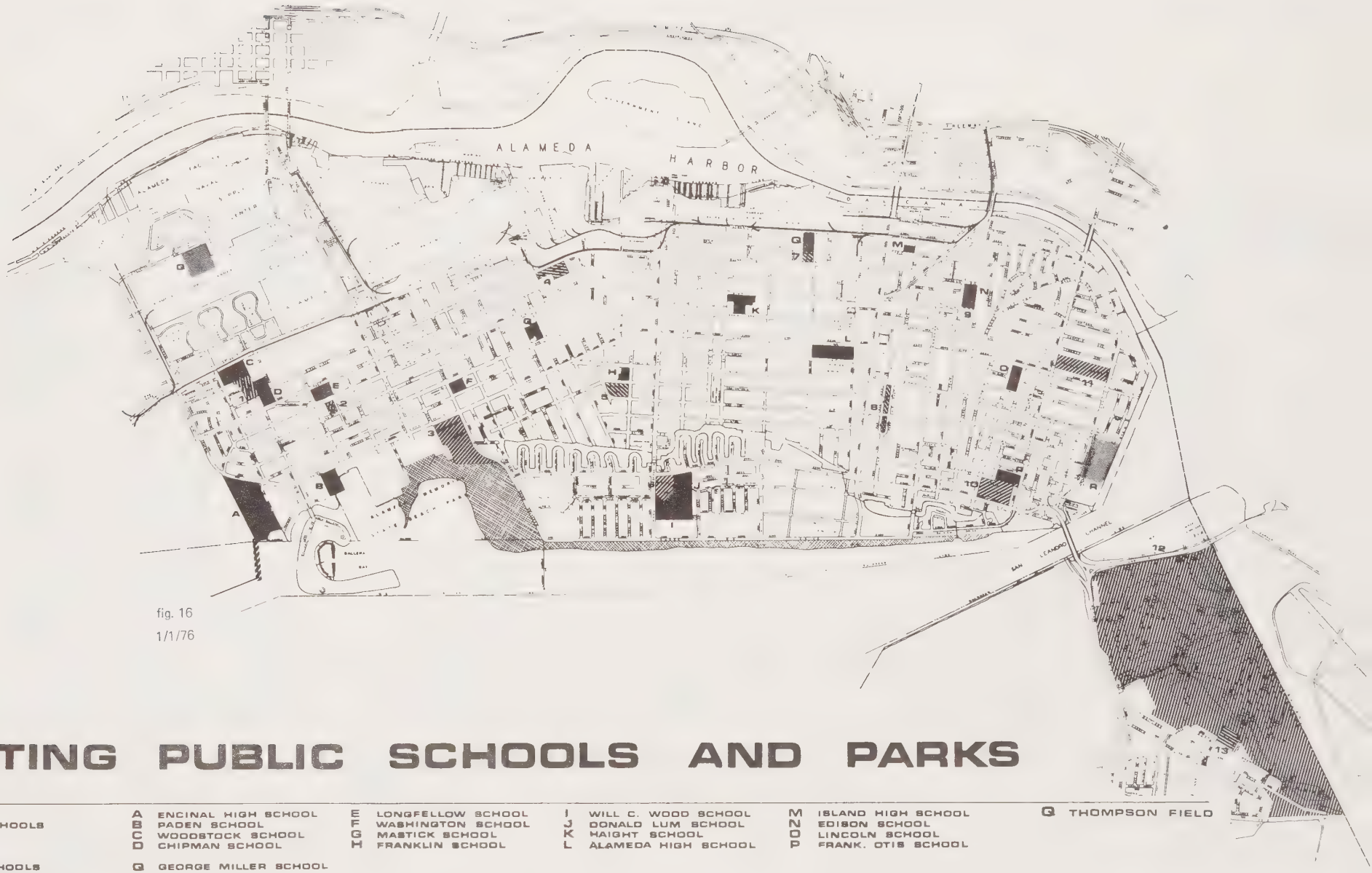


fig. 16
1/1/76

EXISTING PUBLIC SCHOOLS AND PARKS

KEY

EXISTING PUBLIC SCHOOLS

A ENCINAL HIGH SCHOOL
B PADEN SCHOOL
C WOODSTOCK SCHOOL
D CHIPMAN SCHOOL
E LONGFELLOW SCHOOL
F WASHINGTON SCHOOL
G MASTICK SCHOOL
H FRANKLIN SCHOOL
I WILL C. WOOD SCHOOL
J DONALD LUM SCHOOL
K HAIGHT SCHOOL
L ALAMEDA HIGH SCHOOL
M ISLAND HIGH SCHOOL
N EDISON SCHOOL
O LINCOLN SCHOOL
P FRANK. OTIS SCHOOL
Q THOMPSON FIELD

PUBLIC SCHOOLS NOW UNDER CONSTRUCTION

Q GEORGE MILLER SCHOOL
R LINCOLN SCHOOL

EXISTING PARKS

1 WOODSTOCK PARK
2 LONGFELLOW PARK
3 WASHINGTON PARK
4 NORTHSIDE PARK
5 FRANKLIN PARK
6 RITTLER PARK
7 MCKINLEY PARK
8 JACKSON PARK
9 EDISON
10 KRUSI PARK
11 LINCOLN PARK
12 MUNICIPAL GOLF COURSES
13 GODFREY PARK

EAST BAY REGIONAL PARK

CROWN MEMORIAL STATE BEACH PARK

0 1000 2000 4000
SCALE IN FEET

NORTH

Distribution of Recreational Open Spaces

The service radius evaluates the distribution of recreational open spaces within a community. A quarter mile is considered a reasonable distance to walk to a recreation area. Therefore, recreation facilities are considered to serve areas within a quarter mile service radius.

Parks and recreational facilities are fairly well distributed in Alameda to serve residential neighborhoods (see fig. 16, p. 60). There are parks and recreation areas, if only elementary school playgrounds, within a quarter mile walking distance of most parts of Alameda. Parts of the Northside, South Central, and Bay Farm Island neighborhoods are exceptions. When school playgrounds are excluded, however, parts of the West End, East Central, and most of Central Alameda do not have parks within the quarter mile desirable service radius.

Recreational Open Space Acreage

Another method of assessing the adequacy of recreational open space is to evaluate its acreage in relation to population. The California Outdoor Recreation Resources Plan recommends that cities provide 10 acres (not including school playgrounds) of public park and recreation areas for each 1,000 residents.* The state standards are based on city-owned acreage, including golf courses. Using this same basis, in Alameda there presently is a total of 6.87 acres of City-owned, nonschool park and recreation areas per 1,000 residents. Since the golf course is a single purpose facility using large amounts of land, a second calculation should be made without the golf course acreage. The ratio then drops to 1.01 per 1,000. Crown Memorial State Beach Park is not owned by the City and has a service radius beyond the City's boundaries, so it would not be included in the analysis using the state standards. Still, it does serve some neighborhood and community park needs. If Crown Beach is included in the calculations (without the Golf Course), then the ratio becomes 7.42 per 1,000 (see Table 2, p. 63). Analyzing the figures for nonschool park land from several different perspectives indicates that shortages still exist, in comparison to widely used standards.

Some Bay Area cities, similar to Alameda in the relationship within the community between older developed areas and undeveloped land, have set goals that average about 4 acres per 1,000 residents for both neighborhood and community parks. Most often this includes school

*The State of California Department of Parks and Recreation, *California Outdoor Recreation Resources Plan* (Sacramento, California, 1974) p. 130.

playgrounds. The cities of Palo Alto, Oakland, San Mateo, Hayward, Richmond, and Redwood City have such standards.*

These acreage standards are usually intended to be divided about equally between neighborhood and community facilities.** Several communities require developers to dedicate parks to the city to meet at least part of the open space requirements new residents add to the city.***

Older, completely developed communities do not normally have acreage standards. Berkeley, Albany, San Leandro, South San Francisco, and Daly City have no standards. These communities attempt to gain as much new open space as is possible. They set no acreage goals because their vacant land is so limited. In some older areas of Alameda, it would be impossible to meet acreage standards even if all vacant land were used for open space. In undeveloped areas though, like Bay Farm Island and portions of the Estuary, more open space can be provided. This acreage is necessary in order to at least provide for the open space needs of new residents.

Presently, Alameda has a total of 2.2 acres of neighborhood and community open space per 1,000 residents: .82 acres per 1,000 residents of neighborhood open space, including elementary school playgrounds, and 1.41 acres per 1,000 residents of community open space, including junior and senior high school playgrounds. The City's neighborhoods, with the exception of the East End and South Shore, fall short of the 4 acre/1,000 resident community and community and neighborhood park and recreation facilities standard. The greatest inadequacies are in the areas where apartments have been added in previously single-family neighborhoods without increasing the open space. There is also a lack of open space around the older commercial areas, Park and Webster Streets. Shoppers or people who work in the area have little open space where they can relax or picnic. An exception is Jackson Park, within walking distance of the Park Street area.

School Playground/Park Relationship

It has been the City's policy over the years to encourage joint school/park sites which are cost efficient in the sense of eliminating duplicate facilities on a school playground and park. School playgrounds, however, play a different recreational role than parks. They are devoted to active play and serve primarily children's recreational needs. Parks include passive, as well as active, recreation areas, and serve a wider range of recreational needs and ages. School grounds are not available to the general public during school hours. Consequently, retired people, parents with pre-school children, and working people whose leisure hours coincide with school hours do not have the same recreational opportunities as some other residents of the City. The limitation is compounded if schools use adjacent park facilities during school hours. Communities, such as Oakland and Palo Alto, noting the different age groups and recreational needs served by parks versus playgrounds, recommend a 2/3 park and 1/3

* Palo Alto and Oakland — 4 acres/1,000 residents
San Mateo — 6 acres/1,000 residents
Hayward — 3.6 acres/1,000 residents
Richmond — 2.2 acres/1,000 residents plus
— 1.0 acre/200 elementary school age children
Redwood City — 6.5 acres/1,000 residents

**Oakland has a policy of requiring 2.5 acres per 1,000 residents, excluding school playgrounds. San Mateo requires 4 acres of parks per 1,000 residents. Hayward requires 3.6 acres per 1,000 residents, including both parks and playgrounds.

***Fremont and Walnut Creek are two examples in the Bay Area.

EXISTING NEIGHBORHOOD & COMMUNITY OPEN SPACE WITHIN ALAMEDA NEIGHBORHOODS

Neighborhood	Average Density (D. U. Per Acre) (1)	NEIGHBORHOOD OPEN SPACE					COMMUNITY OPEN SPACE					TOTAL OPEN SPACE (ACRES)	TOTAL ACRES PER 1,000 POP.
		Park (Acres)	Acres Per 1,000 Pop.	School Open Space (2) (Acres)	Acres Per 1,000 Pop.	Total Open Space (Acres)	Park (Acres)	Acres Per 1,000 Pop.	School Open Space (3) (Acres)	Acres Per 1,000 Pop.	Total Open Space (Acres)		
West End	21.8	5.3	.47	8.3	.74	13.6	0	0	25.6	2.28	25.6	39.2	3.49
Northside	14.6	4.8	.63	0	0	4.8	0	0	2.28	.3	2.28	6.99	.93
Central	17.1	0	0	4.9	.71	4.9	.5	.07	5.3	.77	5.8	10.7	1.56
Gold Coast	9.3	3.0	1.28	.9	.38	3.9	0	0	0	0	0	3.9	1.66
South Central	18.9	0	0	0	0	0	0	0	0	0	0	0	0
East Central	26.7	2.3	.46	0	0	2.3	0	0	.6	.12	.6	2.9	.58
East End	6.8	.4	.06	6.1	.87	6.5	15.8	2.27	9.8	1.4	25.6	32.1	4.6
South Shore	19.4	4.8	.52	3.2	.35	8.0	15.0	1.6	9.1	.99	24.1	32.1	3.46
Bay Farm Island	7.9	5.4	1.19	0	0	5.4	2.3	.51	0	0	2.3	7.7	1.7
TOTAL (4)	16.68	26.00	.43	22.9	.38	48.9	33.6	.56	52.68	.88	86.28	135.59	2.27

Table 2

5/1/76

(1) The dwelling units, residential acreage, population and density for each neighborhood are derived from the map "Density Related Statistics" and the accompanying Tables. A household size of 2.5 was used to estimate population.

(2) Open Spaces associated with Elementary Schools are neighborhood open spaces. The amount of open space is based on Table25 "Schools and Open Spaces Associated with Schools in Alameda".

(3) Open Spaces associated with Junior High Schools (grades 5 and above) and Senior High Schools are Community Open Spaces. The amount of open space is based on Table **25** "Schools and Open Spaces Associated with Schools in Alameda".

(4) The Naval Air Station housing and associated population is not included in this table because the Naval Air Station has its own recreation facilities and schools.

(5) The East End open space calculations referred to in Table 2 includes the Old Lincoln School site in Community Open Space (2 acres). The 15.8 acres of Community Park is made up of Lincoln Park and Krusi Park. The 9.8 acres of Community School Open Space comes from the Old Lincoln School Site and the New Lincoln School Site. If the 2 acres attributable to the Old Lincoln School Site is deducted, then the total acres of open space per 1,000 population is 4.32.

Existing Park and Recreation Areas Survey

PARK OR RECREATION CENTER	VEGETATION	MAINTENANCE	AESTHETIC APPEAL	VISIBILITY AS OPEN SPACE IN THE NEIGHBORHOOD	AUTOMOBILE ACCESSIBILITY	PEDESTRIAN ACCESSIBILITY	TYPE OF PARK	TOTAL EVALUATION SCORE
ALAMEDA MUNICIPAL GOLF COURSE	3	3	3	3	3	1	R	16
ALAMEDA SWIM CENTER	1	1	1	1	3	2	C	9
ENCINAL SWIM CENTER	1	1	1	1	3	2	C	9
BAY FARM RECREATION CENTER	1	1	1	1	3	1	C	8
BOAT RAMP	1	2	1	1	1	1	C	7
EDISON PARK	2	3	2	2	2	2	N	13
FRANKLIN PARK	3	3	2	3	2	2	N	15
GODFREY PARK	1	2	1	1	1	1	N	7
JACKSON PARK	3	3	3	3	3	3	N	18
KRUSI PARK	1	3	1	3	3	2	C	13
LINCOLN PARK	3	3	3	3	3	2	C	17
LONGFELLOW PARK	2	2	2	2	2	2	N	12
McKINLEY PARK	2	1	1	1	2	2	N	9
MODEL AIRPLANE FIELD	1	1	1	1	2	1	C	7
BUENA VISTA PARK	3	3	3	3	3	2	N	3
RITTLER PARK	1	3	1	3	3	1	N	12
WASHINGTON PARK	3	3	2	3	3	1	C	15
WOODSTOCK PARK	1	3	2	1	1	2	N	10
AVERAGE EVALUATION SCORE	1.8	2.3	1.6	2.0	2.2	1.6		11.8

Evaluation Score

3 good

2 moderately good

1 poor

Type of Park

R Regional

C Community

N Neighborhood

Table 3

school playground breakdown. The existing ratio in Alameda for all neighborhood and community open spaces is 1/2 park and 1/2 playground. This indicates school playgrounds now provide a great proportion of the recreational open space. The organized after-school programs at schools have declined recently due partially to a lack of funds. Even where no active program exists, some schoolgrounds have been closed after hours due to a concern for security. The quality of open areas around schools varies greatly. Some have landscaped areas with mature trees and some are almost entirely asphalt.

Distribution and acreage standards are useful because they analyze availability, as well as amount, or recreational open space. They help establish goals for new areas and indicate where there are open space inadequacies in existing areas. Each city must make its own judgement of its recreational needs and priorities, however. Standards can only serve as guidelines. The types of facilities and open spaces provided must be considered as well.

Changing Demands for Recreational Open Space

As the recreational open space desires of the public change, new types of recreational facilities are needed. In the Bay Area, there is a greater emphasis on city-wide and regional parks where activities are generally unstructured. There is an increased demand for facilities along the bay shoreline.* An expanding interest in hiking, bicycling, and horseback riding is reflected in a demand for trails that link residential areas or tie two or more recreational areas together.

Abandoned railroad right-of-ways can provide bicycle and pedestrian trails. A recent example of this is found in the Baron Park section of Palo Alto. But the concept is not new to Alameda. The landscaped median at the east end of Encinal Avenue is an old railroad right-of-way.

In some Bay Area cities, particularly in those that are more intensely developed, unused vacant lots have been taken over by neighborhood residents for community vegetable gardens. Sometimes this is a spontaneous volunteer effort; other times it is sponsored by a civic group or the Parks and Recreation Departments.

Open Space for Urban Form

Distinctive cities often have a clear, comprehensible form. In Alameda's case, the form is its overwhelming geographic setting as an island. The various water bodies in and around Alameda - the lagoon, San Francisco Bay, San Leandro Bay, and the Estuary - are open spaces that define the island. However, on the Main Island, the Crown Memorial State Beach is one of the few places where the bay is easily visible. The impact of these water bodies on the form of Alameda is lost in those areas where the shoreline and lagoon edges are devoted entirely to houses, industry and the military. The bridges from Oakland provide a view of the Estuary, but it is only brief.

Few visual openings are provided between structures along the shoreline, so it is possible to drive along streets like Bayview Drive, Fernside Boulevard, and Marina Drive and be unaware of the shoreline behind the row of houses. Although there are existing boat ramps, fishing areas, a bike staging area and marinas, they are for the most part not highly visible nor easily accessible.

It is difficult to classify or quantify those open space which exist primarily for the purpose of providing visual order and relief. They can be public lands, private, or semi-public common open space. While it's fairly simple to establish a given amount of land that would be needed for a sports field, it's another matter to determine how much space is necessary to give a person "breathing room" or to highlight and enhance (make the best use of) the value of surrounding water. Determining the best locations for this form of open space is often difficult.

Public Open Space and Urban Form

Analysis of existing publicly owned facilities can help in understanding the value of open space for visual amenity and form. At present, recreational facilities such as the Alameda Swim Center and the public boat ramp are utilitarian areas. They have little or no landscaping or vegetation(see Table 2, p. 63).These public recreation areas have potential as form-giving, visually attractive elements. Greater attention to the visual character of these facilities would allow them to lend a positive identity to their surroundings.

On the other hand, the open space around the College of Alameda enhances the West End, and helps make the college a distinct element in the community. The landscaped area around City

*_Analysis of Bay Area Recreation Needs,_ State of California Department of Parks and Recreation, op. cit., p. 237.

Hall adds greatly to its positive influence, particularly in contrast to buildings nearby which are built right up to the sidewalk.

The parks contribute much to the form and identity of their neighborhoods and are successful public spaces. As a whole, they are well maintained. Most have good landscaping. Some, Jackson, Lincoln, Franklin and Washington Parks, have outstanding vegetation. Some of the parks, however, are fairly flat and undifferentiated; Rittler Park and Woodstock Park, for example, lack mature vegetation and extensive landscaping. Most have good visibility in their neighborhoods, providing openness and visual variety to the areas around them.

The aesthetic appeal of the parks sometimes varies from one section of the park to the next. The recreational areas contain chainlink fences and paved courts - things which are not green and natural - so those sections of the parks contribute little to the parks' generally positive visual images.

Neighborhood Visual Open Space

In residential neighborhoods, front yard spaces play a role in visually defining the houses and providing space for landscaping and the large street trees that are such an integral part of the City's image. (Alameda means "Avenue shaded by Trees.") However, some of the City's newer neighborhoods lack street trees. Side yards provide an additional definition for each house. The grass medians on Encinal and Thompson Avenues are also examples of neighborhood form-giving open space.

Private and Semi-Public Open Space

Common open space in residential developments, regardless of the density, can serve many functions. It is open space that "substitutes" for some of the functions of backyard space and provides a visual spaciousness not found in small backyards. It also accommodates passive recreational use or limited active recreational use compatible with adjacent residences, and fulfills some of the functions of a neighborhood park. But even if these functions do not occur, the space still can provide identity and give a focal point for surrounding residential groups, as well as establish an image for a neighborhood. The lagoons can serve this purpose. These areas have the potential for fostering familiarity and social interaction among residents of a local neighborhood.

For semi-public, common open space areas to serve these functions, they should occur in as large a block as possible, while still maintaining a visual orientation for all the residences.

For single-family cluster developments, the amount of major common open space should be related to the amount the private backyard space is reduced from conventional single-family standards. An R-1 development normally has 5,000 sq. ft. lots with backyards that must be at least 1,000 sq. ft. (50' x 20'). If houses are developed with a private backyard space of 525 sq. ft. (35' x 15') for example, then there should be 475 sq. ft. of major common space per dwelling unit - the amount the backyard space was reduced.

The form of a development is also dependent on the way open space is grouped. Open space used for separation between buildings, regardless of the numerical density, has a great influence on how dense the development appears. An example of this occurs on Bay Farm Island. The Islandia development, because of its use of open space to separate buildings, appears less dense than another development of the same density might appear.

City Entrances

The Goals Study Task Force on Housing and Physical Planning commented on the City's entrances, referring to the general unattractiveness of the areas (the accumulation of weeds and trash on vacant parcels). The unsightliness of these areas was felt to adversely affect the attractiveness of the City and the attitude and pride of its citizens.

This does not necessarily mean that large areas of open space must be purchased adjacent to the bridge entrances. While this would serve the purpose and may be advisable in some areas, such as along Webster Street near the Tubes, there are other methods. The cities of Fremont and Newark use signing and expanded landscaped medians at their entry points. Fremont has placed additional landscaping requirements on some developments at the city's edges.

Landscaping

Landscaping of park and recreation areas, buildings, and roads is one of the most effective ways to enhance the form and beauty of a community. The present water shortage may create questions about seeking more landscaping. However, landscaping need not use large amounts of water. Native plant materials and other drought resistant plant materials which need little water can be used. It is important that these plants be carefully harmonized with existing more water consumptive vegetation. EBMUD provides information on water conserving irrigation techniques and drought resistant plant varieties.

Conservation of Natural Resources and Managed Production Resources

Open space can be used for the conservation of natural resources. The bay, its tidelands and marshes, are the major natural resources in Alameda. In the past, these areas were not well protected. Over time, tidelands have been lost to Alameda's expansion through land fill (see fig. 17, p. 69). Today, marshes and mudflats are found along the San Leandro Bay and channel and the South Shore. These marshes are a part of Alameda's history and natural form, and are important educational resources.

The East Bay Regional Park District, through its management of Crown Memorial State Beach and implementation of San Leandro Bay Regional Shoreline, is involved in protecting many of these natural areas. Preserving others is an important consideration in planning open space; Bay Farm Island is a case in point. The major threat to these areas - new land fill - is unlikely. Since the Bay Farm Island fill, the City's policy has been to oppose additional fill; BCDC now regulates Bay fill throughout the region.

Tidelands

Most of the water areas around the Main Island and Bay Farm Island peninsula within the City limits are owned by the City. Generally, ownership goes from the tidal basin line to the City limit line in the areas along the Bay and Estuary. Ownership in the Estuary includes the navigable waterways. Exceptions to City ownership include Bay lands owned by the Federal government (i.e. tidal canal), State of California, and the Port of Oakland. A few areas of private tidelands ownership occur along the Estuary, some of which have piers constructed on them. Private ownership also exists in the waterway between Ballena Bay and the Main Island, and the state owns the waters adjacent to Crown Memorial Beach.

The City obtained ownership to these lands through grants from the State of California, beginning in 1913. The grants place restrictions on the City's use of these lands, prohibit the sale of

the tide and submerged lands without a specific act of the legislature, but permit the use of long term leases for the purpose of commerce, navigation, and fishing. These restrictions and a chronology of state legislation relating to city ownership of tide and submerged lands are covered in a City of Alameda report, Tidelands.

The Bay is a source for certain materials that are of value to man. The Bay bottom off the shores of Alameda contains deposits of shells and sand. Dredging has occurred in the past to keep channels open and dredging has brought up sand to be used for fill. The Bay sand is generally of a poor quality for industrial purposes. However, it will be of more value for industrial use when better sources of sand have been exhausted.

The Bay floor from about Alameda south to Fremont-Redwood City contains deposits of oyster shells. These shells can be used in the production of cement, soil conditioner, cattle feed, and poultry grit.* One valid lease exists for oyster shell deposits, though no active dredging is occurring. Dredging may occur from time to time for channel clearance. BCDC and the Army Corps of Engineers regulate dredging.

Expansion of the Conservation Element

Many of the concerns of the 1973 Conservation Element are expanded upon in this plan, particularly in regard to the role of surrounding water areas as a natural resource. The Conservation Element recommended a program of rezoning Open Space Lands to an "Open Space" zone. This is partially complete; parks have been zoned "0" but the designation has not been placed on water areas.

When the water areas are rezoned to Open Space, it will be necessary to review the text of the Open Space zone to see that appropriate water uses are allowed in the zone. An example would be houseboats. They are similar in the nature of their visual impact to boat berthing, but might involve more intense traffic and parking activities.

Other shoreline open space programs have also begun. The City Council has made a commitment to require a continuous band of open space along the Bay Farm Island shoreline. A 3-acre nature preserve has been established along the shoreline at Lincoln Intermediate School, largely through the volunteer efforts of students, their parents, and the teachers. The preserve open space also provides an educational resource for the school.

Some of the financial sources available to implement conservation and open space programs are listed in the Conservation Element. But traditional public financial sources are often limited. Some of the nonfinancial and nontraditional methods of obtaining open space can be examined in the Implementation Program Report on Shoreline Open Space. These would include such things as obtaining open space as a condition of development, and the use of nonprofit organizations to hold lands till the public agency can obtain them.

Open Space for Public Health and Safety

Some of Alameda's open spaces presently fill a public health and safety function, such as the golf course. Parts of the golf course are included within the areas the City's Airport Safety Element identified as Airport Safety Zones (see fig. 37, p. 171). Most of the golf course land is within Zone B, a zone in which residential land uses are not permitted and nonresidential land uses should have very low population densities. A golf course, or any open space, is suitable for the protection of public safety in this zone because normally large groups of people do not congregate in these areas, and use as open space provides an alternative to more intensive development. Apart from the safety zones themselves, the golf course increases public safety

*Goldman, Harold B. (Senior Geologist, State Division of Mines and Geology) *Salt, Sand & Shells: Mineral Resources of the San Francisco Bay,* (1967); San Francisco Bay Plan Supplement, BCDC.

by providing a large, open area adjacent to the airport, increasing the space where planes could land in a crisis without threatening heavily populated areas. In addition, the City's Seismic Safety Element noted that the golf course serves as a tsunami run up area (see fig. 6, p. 25). Having a large water area adjacent to the Naval Air Station increases public safety beyond what is called for by the Airport Safety Zones.

There are other areas within the Airport Safety Zones which are not included within existing open spaces, however, and where open space is either a required or desirable land use. The requirements of the City's Airport Safety Element for open space around the Oakland Airport and the Naval Air Station differ. Around the Oakland Airport, open space is recommended as the future land use within Airport Safety Zone A (see fig. 37, p. 171). For Zone B, a wider range of land uses is permitted, but future land uses should be low density and open space is a suitable land use. A more detailed discussion of the Airport Safety Zones is included in the Bay Farm Island Section of this report and the Estuary Section.

Open space can be used to shield or separate people from noise sources, another public health and safety function. Front yards, for example, separate residents from traffic noise. The City's Noise Element identified areas within the City which are unacceptable for noise sensitive land uses, such as residential, schools, libraries, and auditoriums, because of aircraft or surface noise. Open space could be used in these areas, though open space in areas where the CNEL exceeds 67.5 DB should be devoted to passive nonintense open space uses (see Table 13, p. 170). The Noise Element recommends establishing supplementary, noise-oriented criteria for building setbacks to insure adequate separation from surface noise.

fig. 17
5/1/77

BAY FILLED LAND

FILLED MARSH

FILLED BAY

0 1.5 3

SCALE IN MILES

NORTH

Shoreline Open Space

Treatment of Alameda's shoreline is a major open space issue. The limited amount of vacant land in the developed sections of the City, and the existence of some vacant land along the shoreline, reinforce the open space significance of the shoreline.

Existing Shoreline Access

Most of Alameda's shoreline is privately owned and inaccessible to the public. Crown Memorial State Beach is the only large, accessible, public shoreline area (No. 13, in fig. 18, Existing Shoreline Access.) There is other publicly owned land along the shoreline, most of which is narrow strips of land behind houses. Also, new developments and rebuilding along the shoreline have created more public access areas. Most are on private land and were created in conjunction with BCDC permit procedures. The public pathways and viewing areas along the Alameda Estuary at Mariner Square, the Alameda Yacht Harbor, and the Fernside Shopping Center are examples of these public access areas.

The accessibility and visibility to the public land and public access areas varies. The publicly owned land along San Leandro Bay behind Fernside Boulevard and East Shore Drive houses cannot be enjoyed by the public. The homeowners fronting on the property have taken over the public land, building docks or other structures (see fig. 29, p. 128). On these streets, there are a number of narrow public access areas between houses leading to San Leandro Bay. They stop at the shoreline, and do not provide for walks along the water's edge. Adjacent residents felt these public access areas created security problems, and most of these access points have been closed to the public. Along East Shore Drive, the access alleys at the ends of Meyers Avenue (No. 1 in fig. 18, p. 73), Monte Vista Avenue (No. 2 in fig. 18, p. 73), and the one halfway between Monte Vista and High Street (No. 3 in fig. 18, p. 73), are obstructed by gates. The Meyers access has a "Keep Out" sign. At the end of Central and Liberty (Nos. 4 and 5 in fig. 18, p. 73), public access areas are more obvious. They appear more separate from adjacent residences and have wooden posts (to prevent vehicle access) that tend to define the entrances. The access at the end of Fairview Avenue is not posted or obstructed by a gate, but it also serves as a driveway to an adjacent residence, so it does not look like a place where the public is allowed to go.

Another example of "driveway appearance" occurs at the fishing pier on the east side of the Fruitvale Bridge (No. 6 in fig. 18, p. 73). The path to the pier serves as a driveway for an adjacent residence. By contrast, the access behind the Fernside Shopping Center (No. 7 in fig. 18, p. 73), extends for the entire width of the shopping center, with benches, some landscaping, and plenty of parking. It was a condition of a BCDC permit. Most of the shops are not oriented to the water's edge; their backs face the water.

The next public access point along the Esturary is the Grand Street public fishing area (No.8 in 18, p. 73). It is clearly marked, has a parking lot and a boat ramp with no vegetation, but there are funds for future landscaping.

Alameda Yacht Harbor (No. 9 in fig. 18, p. 73), has a public access walk that was a BCDC permit requirement, but it's unlikely that anyone would recognize it as public. There are two gates to go through, each marked with signs "Private Roadway - Permission to Use Revocable at Any Time." This points out one of the pitfalls of the BCDC required access. When the access area remains in private ownership, the public access right is not absolute and is difficult to enforce.

Pacific Marina (No. 10 in fig. 18, p. 73), is another matter. It developed before BCDC had the power to regulate public access, so no official public access exists. However, while its location is out of the way, it is physically accessible with parking and a landscaped walkway. There are directional signs on adjacent streets pointing the way to Pacific Marina.

Directional signs also point the way to Mariner Square (No. 11 in fig. 18, p. 73). Being a recent development, public access was required by BCDC. Extending for some 170 feet, the access is partially landscaped and provides some close-to-the-water viewing of Estuary activities. Parking is available.

On the other side of the island at Ballena Bay (No. 12 in fig. 18, p. 73), public access is available, A landscaped strip with paved walkway extends for about 700 feet around the eastern edge of the Yacht Harbor, but it is in close proximity to the townhouses. Additional undeveloped access exists, and agreements between the developer and BCDC call for development of more access in terms of fishing piers, walkways, landscaping, etc. These agreements are presently being renegotiated, with consideration to integrate the facilities with Crown Memorial State Beach shoreline and the adjacent public schools.

Crown Memorial State Beach (No. 13 in fig. 18, p. 73), includes large grassy areas, picnic and barbecue facilities, and restrooms. The long, narrow beach along Shoreline Drive is suitable for swimming, sunbathing, picnicking, and bird watching. The usability of the beach could be affected in the future if erosion of the sand beach continues.

The Mayor has appointed an ad-hoc committee to work with EBRPD to develop programs to halt the erosion and correct existing damage. Federal financial assistance is being sought and the South Shore Beach Erosion Demonstration Project is in design by the Army Corps of Engineers.

Behind the houses on Bayview Drive, there is a narrow strip of publicly owned land along the Bay (No. 14 in fig. 18, p. 73). A narrow, dirt trail is the only pathway through this marshy area. The homeowners fronting on this public land have built fences and extended their landscaping so that, though this area is technically open to the public, the public may not feel welcome there because of the private nature of its treatment. By contrast, the BCDC required walkway behind the Townhouses at Ravens Cove (No. 15 in fig. 18, p. 73), is easier to get to and visible.

A small fishing pier exists across the channel on Bay Farm Island, next to the bridge (No. 16, in fig. 18, p. 73). However, casting distance to the water may be a problem at low tide. Adjacent to the pier area, the City has approved plans for a swim and racquet club that includes a requirement for a public walkway along the shoreline.

Most of the access areas described are narrow areas in close proximity to commercial or residential development and lack clear identity as access areas. They are not generally well landscaped. An exception would be the shoreline strip provided for public access along the Ravens Cove Townhouse development which is landscaped. The separation and distinction from the immediately adjacent residential area are better than at some other public access areas in the City.*

*For more detail on these public access areas, see San Francisco Bay Conservation and Development Commission, *San Francisco Bay Public Access and Recreation Areas,* (San Francisco, California, June 1976.)

Uses of Shoreline Open Space

Shoreline open space accomplishes many open space functions. This includes open space for recreation, visual form, safety, and conservation of resources. Some open space functions can only occur at the shoreline: fishing, boating, swimming, and water fowl refuges. Other open space uses may not be appropriate for the shoreline, such as view obstructing recreational structures like tennis courts.

SHORELINE ACCESS SURVEY

0 1000 2000 4000
SCALE IN FEET

fig. 18
5/1/77

General Circulation Issues

Background Information

Much of the information on circulation was compiled by a traffic consultant,* based on information supplied by the City's Engineering Department. A description of the existing road system was developed, including the lane widths (see fig. 19, p. 79), and daily volumes (see fig. 20, p. 80), as well as traffic increases on City roads over the past ten years (see fig. 23, p. 85). Estimates were made of the daily traffic flow to and from the City and between various parts of the City (see Tables 4 and 5, p. 77-77, and Table 6, p. 78).

Based on existing trip generation rates within the City and data from Caltrans, estimates of trip generation rates for proposed land use categories were also prepared (see Table 7, p. 88). Specific estimates of trip generation and its relationship to holding capacity were made for large, undeveloped areas on the Estuary and Bay Farm Island. The impact of traffic from new development in these areas on existing development was evaluated in some detail, particularly the impact of Bay Farm Island development on the East End.

Information was also gathered on other parts of the City's circulation system. Data on existing bus routes and the frequency of bus service was collected from AC Transit (see fig. 41, pp. 252-256). The City's bikeway proposals were evaluated, as were existing water and rail transportation systems.

Goals Study Issues

The Community Goals Study included a Transportation Task Force. This task force expressed concern over the effect of automobile and truck traffic on the livability of neighborhoods and the quality of the environment. Their goals included improving public transportation, encouraging bicycling, and minimizing motor vehicle traffic to and from new developments. The Transportation Task Force also set as a goal minimizing vehicle congestion and bottlenecks on Alameda streets while preserving Alameda's quiet, residential character. To achieve this goal, the task force adopted the following objectives: develop a Northside parkway from Webster Street to the Estuary; reduce traffic congestion on Park and Webster Streets through

*The City was assisted in the development of the Circulation Sections by Mr. Don K. Goodrich, City Traffic Engineering Consultant, who acted as a traffic engineering consultant for this plan.

traffic control techniques; and develop a City-wide traffic circulation plan, including truck routes, but avoid the widening of existing residential streets.

The Economic Development and the Planned Growth Task Forces also had circulation goals. Like the Transportation Task Force, the Economic Development Task Force called for a road along the Estuary, specifiying that it should be a scenic parkway linking Webster Street with Tilden Way to both provide access to the Estuary and eliminate visitor traffic from residential streets. This task force also discussed improving traffic circulation in shopping areas such as Park and Webster Streets and improving access routes so that commercial traffic could be routed without utilizing residential streets. The Planned Growth Task Force wanted the voters of Alameda to decide in the future on freeway and bridge construction.

Vehicular Circulation

Access to the Island

Vehicular access to and from the Main Island is entirely limited to five points: the parallel Posey and Webster Tubes, three bridges across the Estuary, and the Bay Farm Island Bridge. During 1975, the number of vehicles entering and leaving Alameda through these five points was 122,900 per day. Very little of this traffic was through traffic which passed through the City without stopping. The Bay Farm Island Bridge carries the most through traffic, approximately 800 of the 20,600 traveling along Doolittle Drive from Oakland and crossing the Bay Farm Island Bridge do not stop in the Main Island. But this through traffic is still only 4% of the total Bay Farm Island traffic (see Table 4). Traffic entering and leaving Alameda is essentially generated by activities within the City.

The Tubes carry the most vehicles, averaging about 46,000 vehicles daily. During morning and evening rush hours, the Tubes are at or near Service Level C capacity in both directions because of traffic commuting from Alameda to work and other traffic commuting to jobs within Alameda, particularly at the Naval Air Station (see Table 5, p. 77). The Estuary Section explains that the Tubes have a peak hour reserve of only 450 vehicles per hour.

The Park Street Bridge is next in volume. It carries over 30,000 vehicles daily (see fig. 20, p. 80). and has the capacity to carry 158 more vehicles in the critical a.m. northbound peak hour. The access to the Tubes and the Park Street Bridge is through business districts in Alameda, where traffic moves slowly. Traffic tends to back up along these commercial streets, limiting the capacity of these entrances and exits.

The High Street Bridge and the Bay Farm Island Bridge carry over 15,000 vehicles daily (see (fig. 20, p. 80). The Bay Farm Island Bridge could accommodate about thirty percent

*Service Level C is the traffic standard the City has set. Service levels describe various degrees of traffic volume and movement (see Table 24 in the Appendix). Ideally, traffic should move at Service Level A is not practical because of the cost, the lack of available room for road expansion, and the environmental impacts. A more realistic goal is Service Level C, where the driver feels somewhat restricted and backups occur at intersections, but substantial delays do not occur.

Estimated Daily Traffic Flow To and From The City of Alameda - 1975

Internal Traffic Zones	Tubes	3 North Bridges	BFI Bridge
1	6,100	8,300	2,700
2	2,200	2,900	1,900
3	5,300	7,000	2,300
4	3,000	3,900	1,300
5	5,300	7,000	2,300
6	4,800	6,500	2,100
7	4,400	6,000	1,900
8	3,000	4,000	1,300
9	3,500	4,800	1,500
10	5,700	7,800	2,500
Subtotal	43,300	58,200	19,800
Through traffic	300	500	800
Total	43,600	58,700	20,600

Source: Don Goodrich, City Traffic Engineering Consultant.

Table 4

Traffic Commuting to Jobs in Alameda

Origin of People Commuting to Work in Alameda[1]

Alameda County		87.6%
Alameda	34.8%	
Berkeley	3.3%	
Fremont	2.3%	
Hayward	4.6%	
Oakland	25.8%	
San Leandro	6.8%	
Remainder of County	10.0%	
Contra Costa County		8.1%
Marin County		0.2%
San Francisco County		3.4%
San Mateo County		0.7%
Total SMSA		100.0%

Location of Jobs Within Alameda[2]

Park Street	11.7%
Webster Street	8.1%
South Shore	0.9%
NAS/No.Atlantic	59.9%
Estuary	7.2%
Bay Farm Island	0.5%
Central Alameda	11.7%
Total	100.0%

Table 5

1. From data on Major Industry Group for SMSA (19,311 jobs i Alameda from SMSA).

2. Based on 1966 data, page 17, DMJM Master Plan report (22,200 jobs).

more peak hour traffic at Service Level C (about 460 vehicles per hour).* Traffic generated by new developments on Bay Farm Island will soon fill this bridge to capacity during peak hours, however. The High Street Bridge is at or near Service Level C peak hour capacity. Only about 70 peak hour vehicles could be accommodated.** Residential streets, Otis Drive and High Street, provide access to these bridges. These streets are collector streets for their surrounding neighborhoods and carry heavy volumes of traffic. The traffic added to these streets by these bridges creates additional problems for residents on these streets. New traffic from proposed developments on Bay Farm Island will add more traffic to these streets. The future traffic conditions on the Bay Farm Island Bridge are discussed in more detail in the Bay Farm Island Section of this plan. Traffic on other East End streets is discussed in the East End Section.

The Miller-Sweeney Bridge is the only bridge with any significant amount of excess capacity. The Miller-Sweeney Bridge has high volumes only in the evening southbound, a unique pattern for Alameda.*** Connections to the Nimitz Freeway are difficult from the Miller-Sweeney Bridge, particularly northbound, which explains why this bridge is not used heavily in the morning when traffic generally wants to head north on the Nimitz. Even in the heavier traveled evening southbound peak period, the Miller-Sweeney Bridge has the capacity to carry 760 more vehicles per hour.

*Environmental Impact Planning Corporation. *Environmental Analysis of Alternative Traffic Routes in the High Street Corridor in the City of Alameda,* (San Francisco, California, 1977), p. 10.

***Ibid,* p. 9.

****Ibid,* p. 10.

Estimated Daily Traffic Flow Within The City - 1975

Internal Traffic Zones	1	2	3	4	5	6	7	8	9	10
1	100	400	2,400	800	1,200	900	2,200	2,200	2,500	2,000
2		200	1,400	500	900	600	1,000	1,000	1,200	1,300
3			1,900	500	2,000	600	2,700	2,400	2,500	3,300
4				300	1,100	900	1,300	1,300	1,400	1,600
5					1,100	1,300	2,400	2,300	2,400	2,400
6						300	1,300	1,300	1,400	1,500
7							1,200	2,000	3,000	4,800
8								900	1,800	2,900
9									1,000	3,200
10										3,000

Source: Don Goodrich, City Traffic Engineering Consultant.

Table 6

There is not a great deal of excess capacity on these entrances to the Main Island nor the streets leading to them. Any new crossings of the waterways surrounding Alameda are unlikely. Such projects are expensive. The environmental impacts of new waterway crossings would generate considerable opposition. If they did occur, connecting interior streets might have to be expanded. Alameda may eventually assume there will be no new crossings. The limited access to the island restricts traffic growth and is a limit on new development.

Capacity of Existing Streets

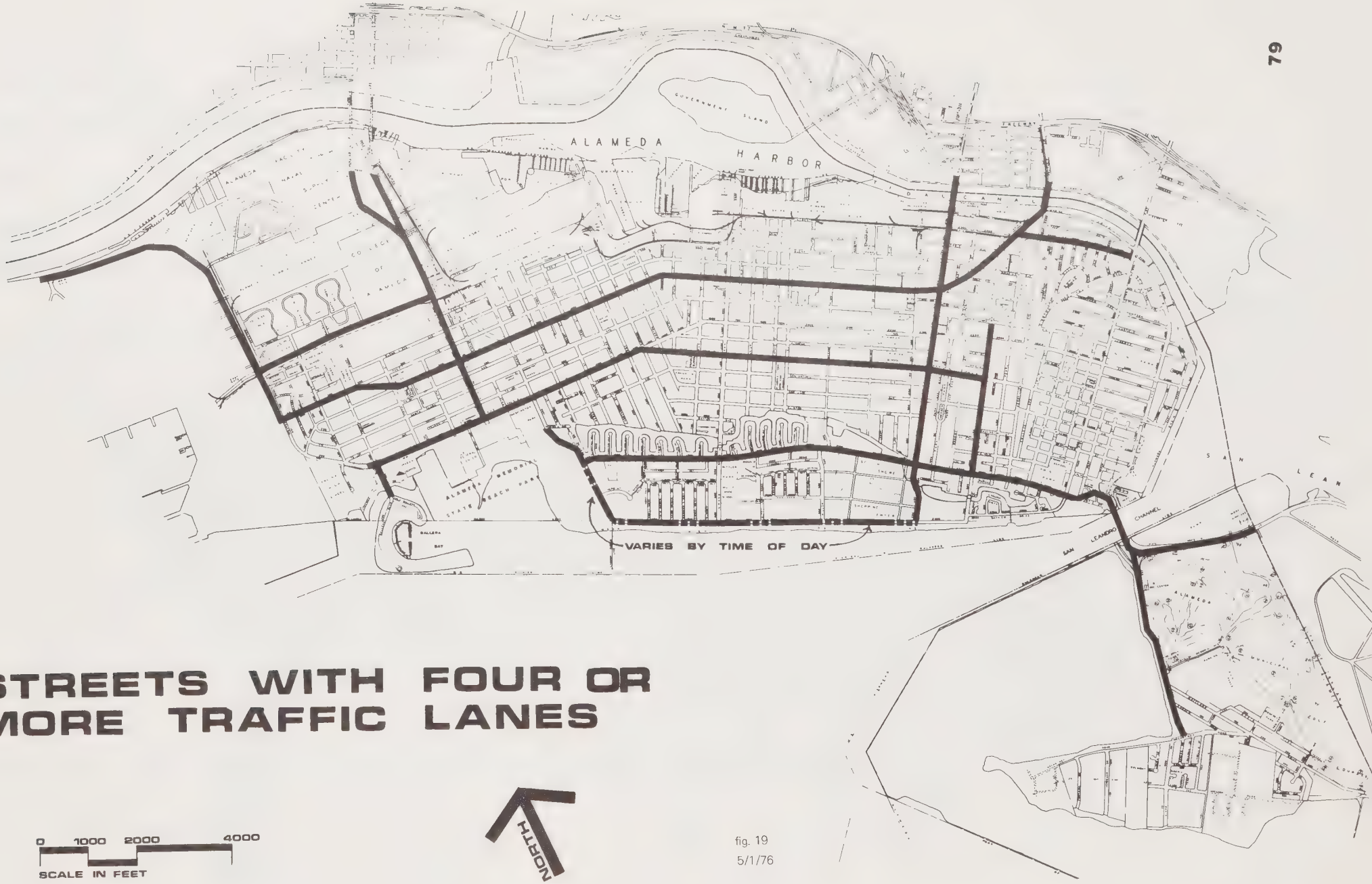
The capacity of Alameda's streets and their ability to handle this total traffic is limited. The majority of Alameda's streets are two lanes. These streets have a designed daily capacity of approximately 5,000 vehicles. There are some four lane arterials with designed capacities of about 25-30,000 vehicles daily (see fig. 19, p. 79). Figure 20, which shows that existing volume of street traffic, demonstrates that several streets, High Street, Santa Clara, Central, and Buena Vista Avenues for example, carry traffic that approaches or exceeds their designed capacity.

Street Classification

Conventional street classifications, such as arterial, collector, and local, are of limited usefulness in a residential community with a grid pattern. Physically, almost all existing east-west streets are arterials. That is, they carry traffic over a long distance, have few stops, and have the right-of-way over cross streets. To gain a more useful distinction between these streets, they are defined by the volume. The volume demonstrates the service a street is providing and its impact on the community.

There is a designated State Route in Alameda - Route 61 and Route 260 - which follows Webster Street to Central Avenue to Encinal Avenue, to Broadway and along Otis Drive, across the Bay Farm Island Bridge, and continues on Doolittle Drive.

There are also designated truck routes within Alameda (see fig. 21, p. 81). Several of these truck routes are along residentially bordered streets, such as Broadway and High Street. It would be desirable to use nonresidential streets as truck routes, if they were available.

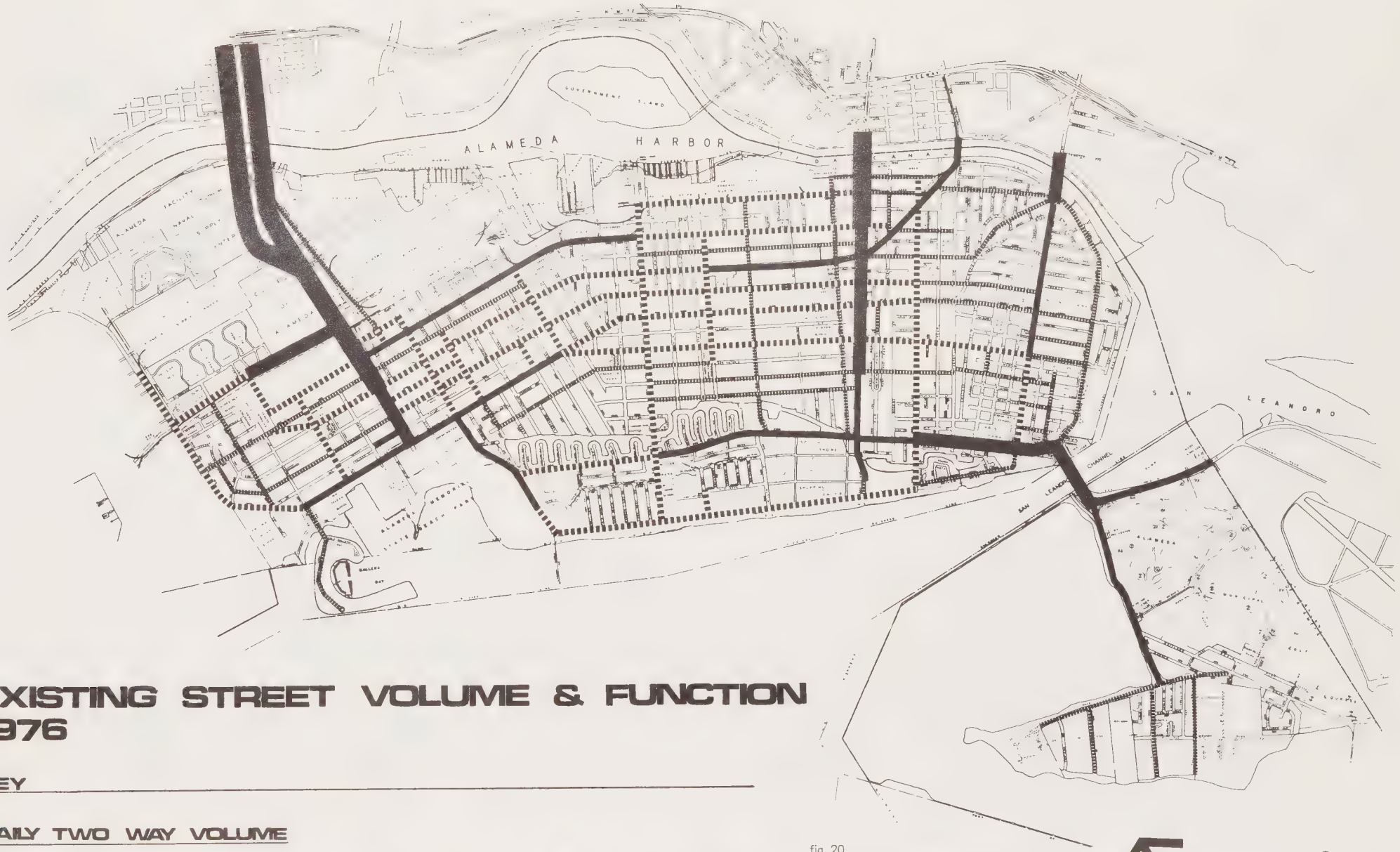


STREETS WITH FOUR OR MORE TRAFFIC LANES

0 1000 2000 4000
SCALE IN FEET

NORTH

fig. 19
5/1/76



EXISTING STREET VOLUME & FUNCTION 1976

KEY

DAILY TWO WAY VOLUME

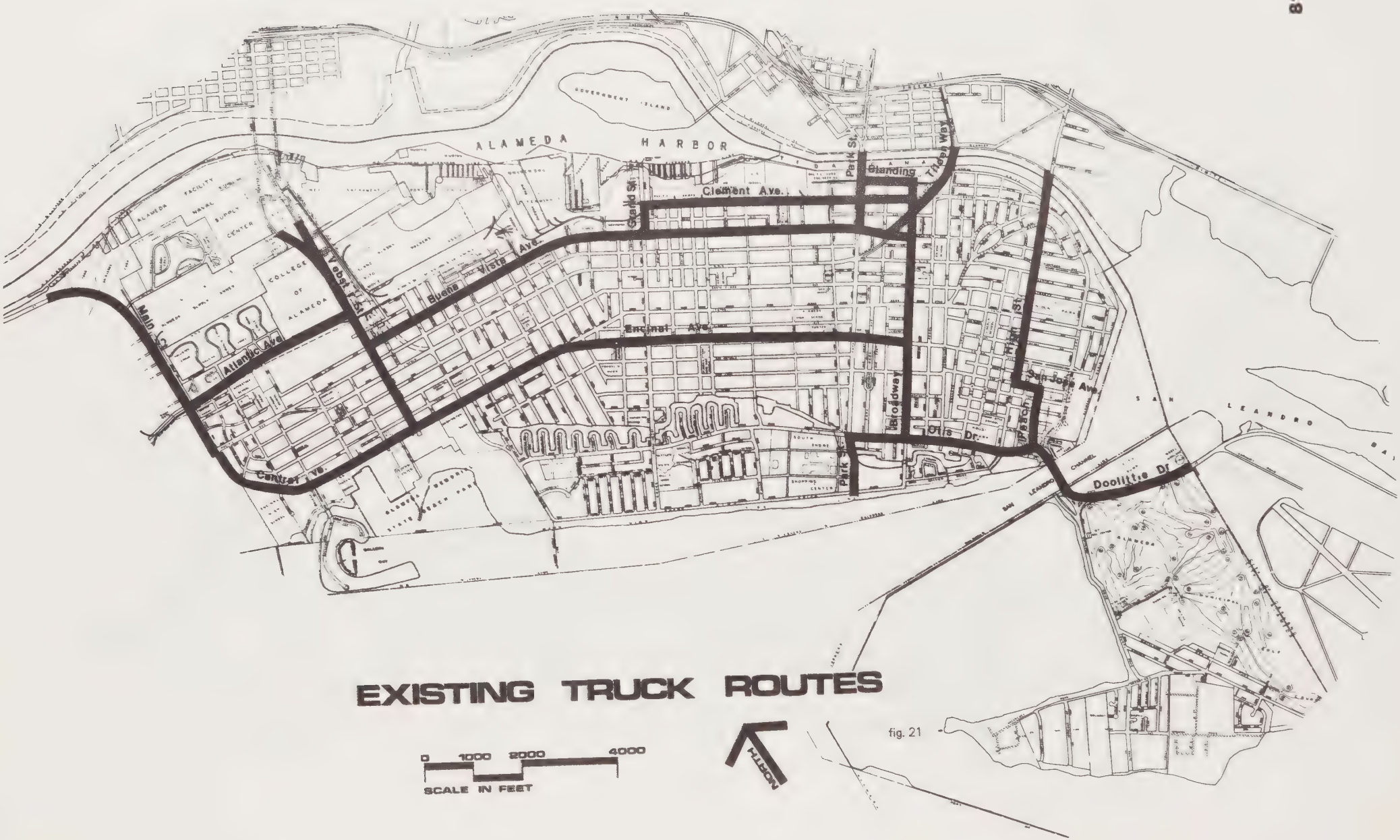
- UNDER 1,000
- 1,000 - 5,000
- 5,000 - 10,000
- 10,000 - 15,000
- 15,000 - 25,000
- OVER 25,000

fig. 20

0 1000 2000 4000

SCALE IN FEET

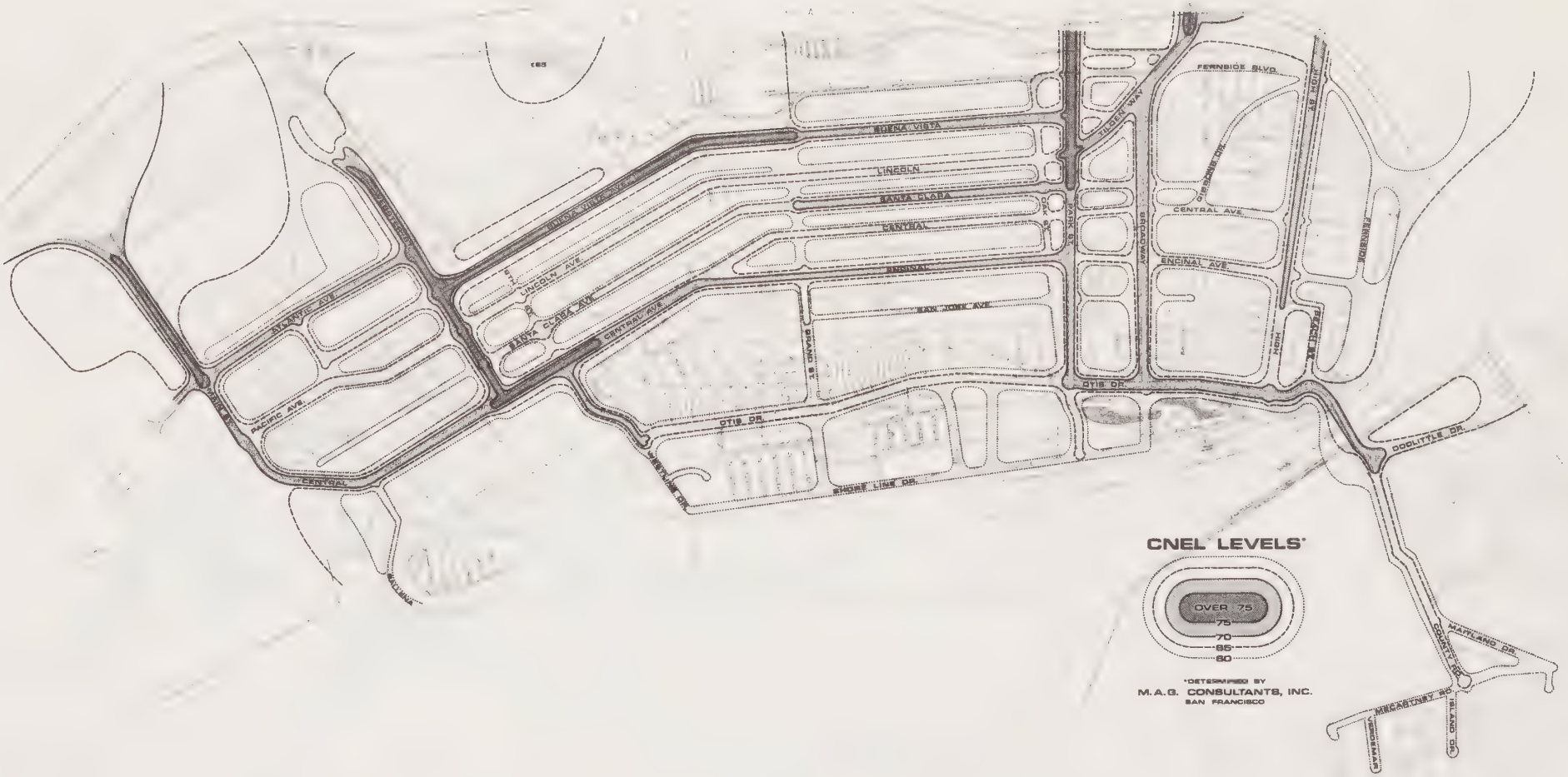
NORTH



EXISTING TRUCK ROUTES

0 1000 2000 4000
SCALE IN FEET

fig. 21



GROUND SOURCE NOISE EXPOSURE LEVELS

fig. 22
5/1/77

0 1000 2000 4000
SCALE IN FEET

NORTH

Traffic on Residential Streets

A major circulation issue is the residential character of most of Alameda's streets. The livability of a street bordered by residences can be negatively impacted long before the street's capacity is exceeded. Most residential streets in Alameda are through streets, especially those running east-west. There are no industrial roads or bypass roads which divert traffic from residential areas. The result is that traffic, instead of being channeled as far as possible into a number of main, nonresidential roads, penetrates to all parts of the City. Creating bypass roads would be difficult on the Main Island, given the island configurations and existing developments. The potential does exist in underdeveloped areas such as Bay Farm Island and the Estuary to create bypass roads, however.

The City's Noise Element identifies streets where the traffic creates Community Noise Evaluation Levels in excess of 60 dB (see fig. 22, p. 82). The uses bordering many of these streets are primarily residential. Several residential streets which function as arterials or carry heavy volumes of traffic have noise levels in excess of 70 dB: Broadway, High, Buena Vista, Santa Clara east of Grand, Central, Encinal. Buena Vista Avenue is an example of what this means. It is an essentially residential, two-lane street carrying over 10,000 vehicles, and problems are aggravated by the fact that many of the vehicles using the street are trucks, since the street is presently designated as a truck route. In 1975, 10.7% of the vehicles between Sherman and Grand Streets were trucks. The impact of this traffic on the street is intense and undermines the livability of the adjacent residential streets as well. It also appears to have affected housing maintenance in this area. The Noise Element recommended a westward extension and upgrading of Clement Avenue as a truck route to take the heavy noise burden off the residential area along Buena Vista Avenue.

Residential streets with little traffic, especially those which carry less than a thousand vehicles per day, have a high degree of livability. Donald Appleyard did a study for the City of San Francisco of three residential streets with varying amounts of traffic.* One had a heavy traffic volume, 16,000 vehicles per day; the second, moderate with 8,000 vehicles per day; and the third, light with 2,000 vehicles per day.

On the heavily traveled street, residents felt the traffic and its accompanying noise were a persistent intrusion into their homes and ruined any feelings of peace and solitude. On the lightly traveled street, people felt relaxed and secure in their homes.

Appleyard also found that, as traffic increases, people cease to use the street as a meeting place. Interest in the street diminishes. Maintenance declines. The street becomes an intruder to be screened out of most daily activities. The block's identity changes from being an extension of people's living space to a traffic corridor. Neighbors and traffic are screened out with equal determination. The type of casual meeting and social interaction which can take place on a street is important for neighborhood security. It gives people an opportunity to know who their neighbors are and where they live.

Many streets in Alameda are at a point where livability and community life are threatened by traffic. Figure 20, p. 80, which shows the volume of traffic of streets, indicates how few streets have traffic volumes of less than 1,000 vehicles per day and how many have traffic volumes in excess of 5,000 per day.

*Donald Appleyard and Mark Lintell, "The Environmental Quality of Streets: The Residents' Viewpoint." *Environmental Design: Research and Practice* (Los Angeles: Regents of the University of California, 1972), pp. 11-2-4.

Protecting Residential Streets from Traffic

Reduced traffic could be helpful to the revitalization of Alameda's neighborhoods. Several methods have been proposed and used in other cities for protecting residential streets from traffic: stop signs, speed bumps, chokers, traffic circles, semi-diverters, and diverters.*

Stop Signs

Residents frequently suggest that stop signs be used to divert traffic from residential streets. The intention is to make through traffic stop so frequently that drivers will choose other routes. However, the success of traffic diversion by stop sign placement along residential streets is related to the ability of other streets to provide a viable travel alternative. Also, too many stop signs can create a lack of respect for stop signs.

Speed Bumps

Speed bumps are also frequently proposed as a method to reduce speed on residential streets. Presently, speed bumps are illegal on public streets in California; they have proven to be a legal liability for cities and are considered hazardous for emergency vehicles.

Chokers

The practice of physically narrowing a street is called choking. The effect chokers have on vehicle speed has not been documented, although it is believed that narrowing a street tends to reduce speed and that a series of chokers will provide some speed reduction along a route, as well as provide a wider sidewalk for better pedestrian environment. However, they would result in a small loss of parking space.

Traffic Circles

A small traffic circle can be placed in the middle of an existing intersection to reduce the volume and speed of traffic. While providing some speed reduction, traffic circles can create conflicts between vehicles and bicycles, especially when vehicles are forced close to the curb in order to turn around the circle. They must be carefully signed, so that there is adequate driver warning.

Semi-diverter

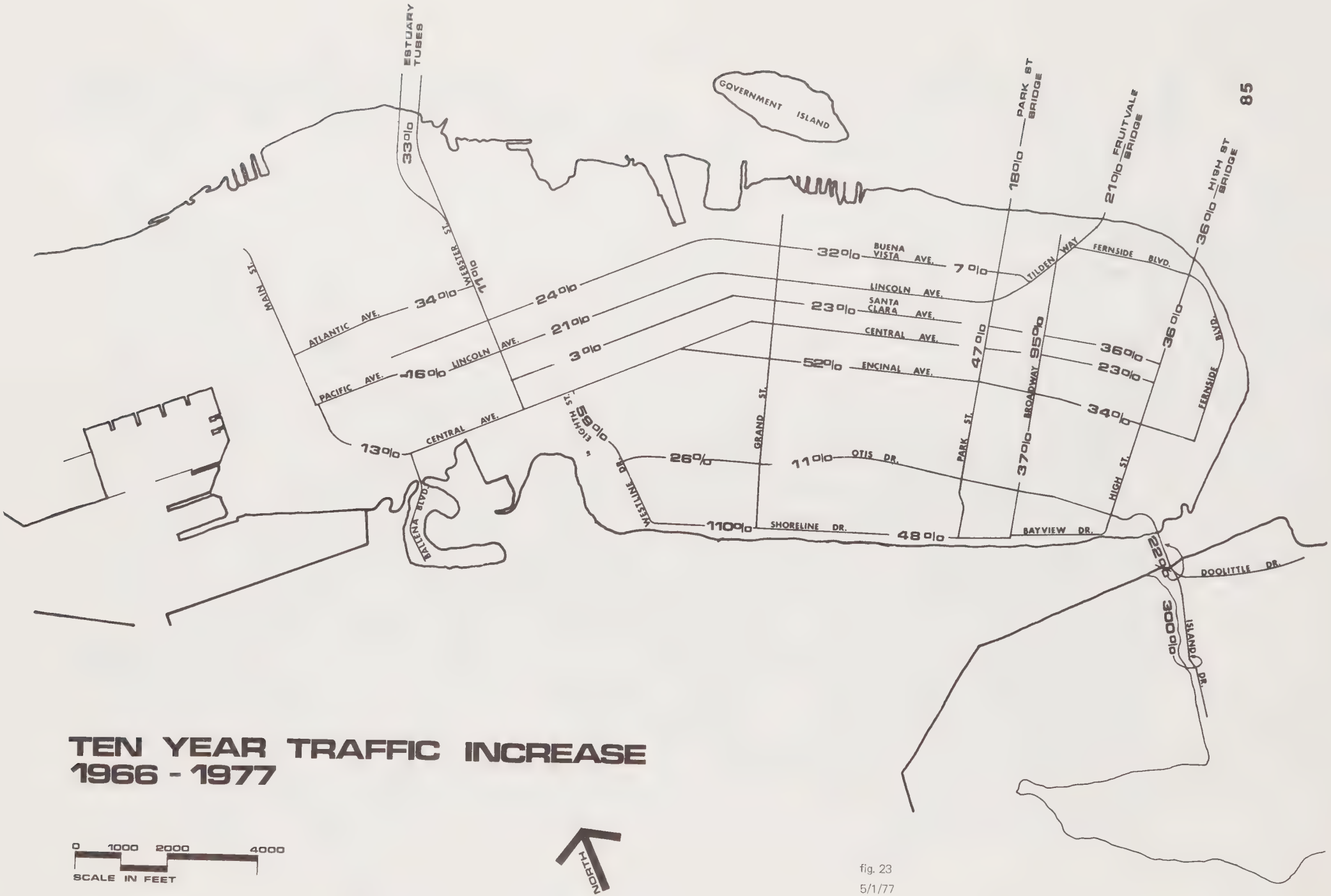
A semi-diverter is a physical barrier which allows travel in one direction while prohibiting travel in the other direction. The barrier is most often placed close to an intersection to prohibit vehicles entering the street. A semi-diverter is presently placed at the intersection of Eagle Avenue and Tilden Way to prevent traffic from taking a right turn off Tilden Way onto Eagle Avenue. Semi-diverters are particularly effective to control highly directional traffic.

Diverter

A diverter is a traffic barrier. It is typically employed on rectangular grid pattern streets to divert traffic onto major streets rather than allowing it to spread through the grid pattern. Diverters are typically placed diagonally across an intersection to stop all traffic.

There is a diverter at the intersection of Everett Street and Tilden Way which prevents traffic from entering or leaving Everett Street at Tilden Way. Numerous designs for diverters are conceivable, ranging from fully landscaped, permanent street reconstruction to extremely simple installations such as a raised traffic barrier.

*DeLeuw, Cather and Company, *Neighborhood Traffic Study, Final Report for the City of Berkeley* (California, July 1974 and Traffic Engineering, October 1975).



TEN YEAR TRAFFIC INCREASE
1966 - 1977

0 1000 2000 4000
SCALE IN FEET

NORTH

fig. 23
5/1/77

NUMBER OF BUSES DAILY ON EXISTING BUS ROUTES

fig. 24

5/1/77

The success and acceptance of different types of diverters are related to the availability of other, nonresidential major streets to handle the traffic, which is limited in Alameda. Diverters can be used very successfully if a nonresidential bypass road is available and the residents of the streets are in support of traffic diversion. In addition, diversion has been most successful in other communities when done in small areas. Even where alternative nonresidential streets are not available, some traffic diversion could be attempted to improve the pedestrian environment around and pedestrian access to facilities such as parks and schools.

Traffic Growth in the Recent Past

Some parts of the City have experienced rapid increases in traffic volume over the past ten years (see fig. 23, p. 85). These areas are especially vulnerable to the degrading impact of traffic; many of these streets are residentially bordered.

The areas impacted by new development on Bay Farm Island have shown the greatest increases. For example, traffic increased 300% on Island Drive. The streets, Buena Vista and Lincoln for instance, around the Estuary, the other major site of future development, also showed significant increases over the past ten years.

Traffic Generation of Alternative Land Uses

Different types of development generate different amounts of vehicular traffic. For residential developments, generally the higher the density the fewer trips are generated per dwelling unit. The City Engineering Department's 1976 study of trip generation rates for existing residential developments on the Main Island, which included primarily areas with average densities of less than ten dwelling units per acre, found an average vehicular trip generation rate of 11.7 trips per dwelling unit. Where density average 12 units per acre, there was an average vehicular trip generation of 9.2 trips per dwelling unit. At densities of 14 dwelling units per acre, the average trip generation was 6.2 trips per dwelling unit. In the survey of existing residential areas on Bay Farm Island, single-family houses, with average densities of approximately 5.7 dwelling units per acre, generated an average of 8.3 trips per dwelling unit, while townhouses, with average densities of 9.5 dwelling units per acre, generated an average of 5.7 trips per dwelling unit.

The Engineering Department's and Caltrans' surveys of trip generation were used to develop trip generation rates for land uses proposed in this plan (see Table 7, p. 88). Single-family houses on the Main Island would generate about 11.7 trip ends per dwelling unit. Special multi-family housing would generate fewer trips per dwelling unit, approximately 8.6 trips per dwelling unit (see Table 7, p. 88). Comparing by acreage, however, an acre of special multi-family housing, containing 17.5 dwelling units per gross acre, generates 150 trip ends daily. In contrast, an acre of lot and block single-family houses, containing six dwelling units per gross acre, would generate 70 trip ends daily.

General commercial and neighborhood commercial areas generate the most traffic, 900 trips per acre per day. Heavy and light industry generate the fewest, 30 and 70 trips per acre per-day. In addition to the amount of traffic, the type and timing of traffic generated is also a factor. Commercial uses, with the exception of offices, and industrial uses, have a more even pattern of trip generation throughout the day and do not contribute as great a percentage of their daily trips to peak hour traffic as residential uses. However, they generate more truck traffic for deliveries than residential uses.

TRIP GENERATION OF PROPOSED LAND USE

Land Use Category	Daily Trip Ends Per Dwelling Units	Daily Trip Ends Per Gross Acre
RESIDENTIAL		
Single-Family		
Conventional 6 units per gross acre	11.7	70
Planned Development 8.5 units per gross acre	10.6	90
Special Single-Family 6 units per gross acre for single-family, existing multi-family units either remain at existing densities or are rebuilt at 10 units per gross acre.	11.7	70
Medium Density-Multi-Family 17.5 units per gross acre	8.6	150
Special Multi-Family Existing multi-family either remain at existing densities, approximately 17-40 dwelling units per gross acre, or are rebuilt at 17.5 units per gross acre.	8.6	150
Mixed Use		
Residential at 17.5 units per gross acre	8.6	40
COMMERCIAL		
Administrative Professional		150
Neighborhood Commercial		900
General Commercial		900
INDUSTRIAL		
Light Industrial		70
Heavy Industrial		30

Notes:

1. Source: Don Goodrich, city traffic engineering consultant. Trip generation rates were estimated based on existing trip generation rates in Alameda and Caltrans data on trip generation.

2. "Daily Trip Ends" refers to the number of vehicle trips generated per dwelling unit or per acre in one day. Per dwelling unit rates are advantageous for residential land uses since per acre rates do not include any correction for density.

3. The density proposed for the conventional single-family category is 8.5 units per net acre which is equivalent to approximately 6 units per gross acre.

4. The density proposed for rebuilding of existing multi-family units in the Special Single-Family area is 12.45 units per net acre which is equivalent to 10 units per gross acre.

5. The density proposed for rebuilding of existing multi-family units in the Special Multi-Family areas is 21.78 units per net acre which is equivalent to approximately 17.5 units per gross acre.

6. Mixed Use assumes uses are mixed at approximately 1/3 acre each of residential, commercial and office.

Table 7

5/1/77

fig. 25
5/1/77

EXISTING BICYCLE ROUTE MASTER PLAN

Alternatives to the Automobile

A basic transportation issue in Alameda is how to serve the transportation needs of its residents, its commercial and industrial uses, and protect its residential neighborhoods. One way to accomplish this is to reduce the dependence on the automobile and encourage alternative forms of transportation.

Public Transit

Alameda is fairly well served by AC Transit (see fig. 24, p. 86, and fig. 41, pp. 252-256). Most areas of the City have bus service at least within a quarter mile walking distance. Service to the industries along the Estuary and the Northside could be improved, however; there are no bus routes within these areas; the nearest bus service is on Santa Clara Avenue. In certain areas, the issue is not the location of the bus lines, but the frequency of the service. Bay Farm Island, which has been creating so much new traffic in the City over the past ten years, does not have frequent service. There is no bus service on Sundays and service on weekdays and Saturdays is infrequent. The connection by bus to BART, the regional rapid rail system, could be greatly improved. Alameda is not receiving as much benefit from BART as it could.

Work trips are the best targets for diversion to transit because they are regular, don't involve people carrying packages, and offer the greatest payoff in congestion relief. The Naval Air Station and the Estuary, which have the greatest concentration of jobs in Alameda, could be focuses for such an effort. Commuter traffic can also be reduced by car and van pooling, both by those who live and/or work in Alameda.

Walking, waiting and transferring are transit's major problems. Where residences are not spread out, bus stops can be sited at frequent intervals, and walking time is less, making total trip time less. This can increase patronage, which in turn provides justification for more frequent service. More frequent service means less waiting time. Transit districts rarely have the time and money to conduct extensive surveys of **potential** passengers, so increased service is often based on the demand of existing patronage.

New developments can be designed to encourage public transit. Different housing layouts affect the use of transit. Compact development is easier to serve by transit. Bus turnouts, comfortable bus stops with wind and rain shelter, park and ride lots for bikes and/or cars, and bus lanes can facilitate bus use. Bus lanes are effective during periods of congestion to allow buses to bypass waiting vehicles and provide a time saving for buses. They can also function as emergency vehicle access lanes.

The buses presently used by AC Transit within Alameda are large, diesel operated coaches. The engines are extremely noisy. The City's Noise Element recognized this and included recommendations to reduce bus noise. In addition, the size of the buses is out of scale with residential streets. Mini-buses or other smaller buses are easier to maneuver and are more compatible within residential neighborhoods.

Bicycle Circulation

Bicycles are another alternative to the automobile. Alameda's flat topography permits easy biking throughout the City. The City now has an adopted Bike Route Plan that is in the process of being implemented (see fig. 25, p. 89). Two basic types of bikeways are proposed in this Bike Route Plan: on-street (signed, striped and marked, or signed only) and off-street on

sidewalks or as separate bikeways.* Most of the proposed bikeways are on-street. Proposals for off-street bikeways are largely confined to areas along the shoreline and Bay Farm Island. The Scenic Highways Element included the Bike Route Plan in its recommendations. The signing and striping for bikeways has been initiated by the City.

The Bike Route Plan indicates a separate off-street bikeway along the shoreline for the undeveloped areas of the Estuary. No bikeways are indicated in that plan for undeveloped sections of Bay Farm Island. Whether to continue within these undeveloped areas the pattern of on-street bikeways along roadways and separate off-street bikeways along the shoreline, or to change to separate off-street bikeways along streets as well, is an issue. Off-street bikeways provide the most protection for bike riders from vehicles. However, planning for the beginning of the bicycle circulation system at Harbor Bay Isle indicates that there are safety problems involved in intersection planning and greater maintenance and land costs for separate bikeways parallel to roads. If automobile parking is eliminated along on-street bikeways, one of the major safety problems for cyclists would be eliminated.

Presently, the City's sidewalks are its pedestrian circulation system. Designating sidewalks as bikeways can create conflicts between cyclists and pedestrians, and friction between them develops unless both are properly accommodated. Separate, but parallel, paths may be needed in some cases.

The Scenic Highways Element recommended that, once the bikeway circulation system is complete, a map of the route, including identification and description of interesting structures and vistas, could be printed for general distribution or sale. This publication could include information on bicycle safety and laws and be part of a community education program to publicize the bikeway system.

Increased usage of bicycles is promoted by maintenance and storage facilities. Both on-street and off-street bikeways require maintenance to insure that the surface is smooth and free from debris and broken glass. Bicycle parking and locking facilities at schools, stores, and parks could be improved and more provided. Bicyclists need security and convenience in bike parking areas. Bike lockers are suitable for regular users, like employees and students at the high schools. Bike racks, of superior quality to the conventional ones which tend to bend wheels, could provide heavy chains and sheet metal protectors for locks to prevent use of cable cutters by bicycle thieves.

*A detailed account of the Bike Route Plan is found in *City of Alameda, Bikeway Proposal,* August 1, 1974.

Railroads

The present system of railroads in Alameda known as the Alameda Belt Line, operated in conjunction with Southern Pacific, serves the industrial area adjacent to the Estuary and the Naval Air Station for freight traffic only. Railroads are an essential service for these areas.

The Noise Element comments on the CNEL of railroad activity which is relatively low due to infrequency of train movements. A single train, however, can generate noise in excess of 105 dB at a distance of 50 feet.*

About 30 - 50 cars come through the City a day, generally destined for industrial uses along the Estuary. Trains may also pass through the Alameda Belt Line Yard at the north end of Sherman Street. The speeds are low, 9 - 15 MPH, and occur mostly in the evening or night hours.**

The lines have the potential to be converted to other types of circulation routes when they are no longer needed for railroad activity. Tilden Way, for example, is an old railroad right-of-way. Abandoned right-of-ways can be used for bike and pedestrian paths, as well as some open space uses. The future of the use of the lines is largely a function of the industries on the Estuary that use the rails, such as Del Monte, Encinal Terminals, U.S. Steel, and the Naval Air Station and Naval Supply Annex.

Water Circulation

Historically, water transportation was one of the major means of moving people and goods in and out of Alameda, and early growth was based on water access to San Francisco. Commuting to work in San Francisco was accomplished by ferry but that ferry service was discontinued in 1939. Today, people use cars or buses and most goods are carried by truck or rail. Water transportation can, however, still serve an important transportation function by providing an alternative to vehicular travel to and from Alameda for commuting, recreating, and movement of goods.

There are existing water transportation facilities in Alameda, primarily marinas and shipping terminals. Encinal Terminals on the Alaska Basin in the Estuary is the only commercial shipping remaining in Alameda. About 1520 ships per year use the Encinal Terminals. The annual tonnage is about 350,000 tons, and the cargo includes automobiles and lumber.*** Also, the Naval Supply Annex has a shipping terminal remaining in Alameda. Storage of shipped goods is land consumptive. Much of the land along the Estuary around Encinal Terminals is devoted to storing shipped goods. Also, goods must be moved to and from the terminals which generates vehicular traffic on Alameda's streets, particularly truck traffic.

Marinas are the other major facility in Alameda for water transportation. Several exist in Alameda. All but two, Ballena Bay and Aeolian Yacht Club, are along the Estuary. These marinas serve primarily small recreational boats, and the demand for marinas and berth space is increasing.

*_Noise Element - City of Alameda_, September 1976.

**Phil Coppell, Alameda Belt Line, May 1977.

***Peter Wang, President, Encinal Terminals, Alameda, California.

GENERAL RECOMMENDATIONS

General Land Use Recommendations

Residential Areas

Existing Neighborhoods

1. Nonresidential Uses in Residential Areas:

   a. Public and semi-public facilities which provide necessary services to residential areas such as libraries, schools, churches, and public parks and recreation centers, should be permitted in residential areas subject to the following provisions:

      (1) Siting restrictions, such as setbacks and height limitation which apply to private residences, should apply to public uses.

      (2) In addition to the standard requirements of the use permit review process, the following should be evaluated:

         a. Alternative sites

         b. A system of neighborhood compatibility criteria should be developed to provide more precise standards for evaluating use permits in residential areas.

   b. Commercial uses should be allowed in residential areas only under limited circumstances.

      (1) No new commercial uses should be allowed in residential areas.

      (2) Existing commercial uses in residential areas which provide services to the surrounding residential area - small grocery stores, nurseries, barber and beauty shops - should be considered compatible and allowed to remain.

   c. No new industrial uses should be allowed in residential areas.

      (1) Expansion of existing industrial uses in residential areas should be discouraged.

d. The present policy of allowing office uses in certain residential areas should be changed.

(1) Specific areas should be designated Administrative/Professional as the location for concentrated service and professional uses. These are areas where service and professional use are presently clustered in significant numbers. The areas proposed as Administrative/Professional are shown on the Proposed Land Use Map.

e. Zoning ordinance regulations for nonresidential uses in residential areas should be revised to include the above recommendations.

2. Nonconforming Residential Uses:

a. The present provisions for nonconforming uses in the zoning ordinance should be changed to allow for and encourage the rehabilitation of pre-existing nonconforming residences. In no case should such changes allow an increase in the number of units.

Proposed Residential Land Use Categories

Single-Family

1. The proposed Single-Family category should be essentially the same as the existing R-1 and R-1 PD districts. The 5000 sq. ft. of lot area required per dwelling in the R-1 districts translates to a net density of 8.7 dwelling units per acre. In Planned Development, a MAXIMUM gross density of 8.5 dwelling units per GROSS acre is allowed.

a. The Proposed Land Use Map indicates single-family but does not differentiate between conventional R-1 and Planned Developments. However, the text for specific areas indicates that certain areas should be clustered. In those areas, planned development would be required.

2. Single-family areas should be expanded to reflect areas where land use is predominantly single-family.

Special Single-Family

This designation is applied to existing residential areas which contain a mixture of single-family and multi-family residences, as well as areas which are predominantly residential in use, but are zoned commercial or industrial.

The Special Single-Family category has the following basic components:

1. Lots which presently contain one single-family dwelling unit and vacant lots could rebuild to single-family standards (5000 sq. ft. of lot or building area per dwelling unit) under the same conditions as the existing R-1 Zone.

2. When multi-family units are destroyed, some replacement could take place, but subject to 2500 sq. ft. of building site area per dwelling unit.*

a. A duplex or multi-family unit on a lot less than 7,000 square feet, but not less than 5,000 square feet, that is destroyed can be replaced by not more than a duplex or single family unit (destroyed by fire, natural disaster, etc.).

*This means a lot of at least 5,000 sq. ft. would be needed to build two units.

3. New regulations should be developed for open space, setbacks, lot coverage, landscaping, parking, building design, and other factors to insure that the new units are more compatible with the siting and design characteristics of single-family residences.

4. Parcels vacant on the date of adoption of this plan (July 3, 1979) could build at the same density as listed in recommendation #2, 12.45 DU/NA. This would require a 7,000 sq. ft. lot to build two units.

Special Multi-Family

1. Existing multi-family complexes could rebuild, subject to a minimum 2000 sq. ft. of building site area per dwelling unit. The permitted net density for rebuilt areas would be 21.75 dwelling units per acre, or approximately 17.5 units per gross acre. In no case could more units be built than previously existed.

2. New regulations should be developed for open space, setbacks, lot coverage, landscaping, parking, and other factors to insure that rebuilt developments are compatible with the character of Alameda.

3. This designation should be applied to existing multi-family developments covering one block or more in area, as shown on the Proposed Land Use Map.

Relationship of Recommendations to Measure A and Ordinance 1693, N.S.

Since Measure A is a Charter Amendment, no changes have been proposed. The voters of Alameda approved Measure A and it is now a part of the Charter. The effect of Measure A is discussed in the Residential Land Use Issues Section and in the No-Plan Alternative in the Environmental Impact Analysis Section.

Preservation of Older Housing Stock

The City's outstanding stock of older housing should be preserved. Part of the intention of several of the land use recommendations is encouraging preservation of the older housing stock. These recommendations include the development of a Special Single-Family category to discourage single-family houses from being torn down to permit rebuilding at higher densities.

Also, the recommendation that residential uses be specified as conforming uses in commercial areas is intended to discourage deterioration of existing older housing in these areas.

1. Additional measures are needed if architecturally significant groupings of period housing structures are to be preserved as a group. Therefore, the following recommendations are made:

    a. A program should be developed that provides protection for the special characteristics of architecturally unified groupings of houses.

    b. A program should be considered as part of the Historic Resources Element that would allow larger residences identified as landmarks, or historically significant buildings, tax considerations and special maintenance programs in order to make them more economical to maintain.

Expanding Housing Opportunities

The City of Alameda's housing strategy is based upon the availability of federal and state financing for various housing programs. The strategy has two components. The first relates to ways in which the supply of low and moderate-cost units can be expanded through new development. The second relates to ways to utilize the existing housing stock to provide decent, safe, and sanitary housing for lower-income households.

1. The Housing Authority intends to redevelop the Makassar Strait Village project. Makassar Village consists of three separate sites: one on Parrot Street, one on Eagle Avenue, and one facing onto Webster Street. The Combined Land Use Plan recommends the following:

   a. The Parrot Street site and the Eagle Avenue site of Makassar Village (south of the abandoned railroad right-of-way) should be designated Special, Multi-Family.

   b. The Webster Street site of Makassar Village faces onto the most heavily traveled street in Alameda. With the development of Patton Way and the possible development of Atlantic Avenue, this site may not be suitable for residential development. The Proposed Land Use Map indicates the site as open space. However, should it prove impossible to replace these lost units on another site, or through another program (such as a rent subsidy program), then this site should be reevaluated as to its suitability for residential development.

2. The City of Alameda is a virtually built-out community, and must look to its existing housing stock to provide new low-cost units. The Combined Land Use Plan makes the folowing recommendations:

   a. The City must make every effort to utilize rent subsidy programs made available either by the federal or state government. The Section 23 and Section 8 rent subsidy programs are currently available from the federal government. Section 23 leases in Alameda are due to be phased out by February 1979, but there is a possibility that the program may be reactivated.

      If it is not renewed, then every attempt should be made to make the Section 8 program work.

   b. The City must develop programs to rehabilitate the 800 units currently estimated to be in need of repair.* The City has already established a Housing Conservation Program utilizing Housing and Community Development Act funds. In future years this source should be supplemented by Section 312 loans from the federal government, and any other source of rehabilitation monies which become available.

   The number of publically supported low and moderate-cost housing units in the City should not exceed the same percentage of total housing stock as that supplied by other East Bay cities.

*Alameda's 1977 Housing Assistance Plan, Table 1.

Commercial Areas

Changing the Boundaries of Commercial Zones

1 Following adoption of the Combined Land Use Plan, the boundaries of the existing commercial zones should be changed to correspond to the areas designated as commercial on the Proposed Land Use Map.

2 The following criteria, as well as the Proposed Land Use Map, should be used to determine specific zoning boundaries.

a. The existing location, land use, character, and maintenance should be used to determine whether an area and/or parcel within an existing commercial zone is suitable for rezoning from commercial to residential.

b. Areas to be rezoned as residential should be primarily residential and continuations of adjacent residential areas.

c. Parcels in residential use on neighborhood streets are the most important to be rezoned as residential.

d. The areas to be rezoned residential should contain residential uses capable of renovation as housing.

e The amount of commercial uses in areas to be rezoned as residential should be minimized; the focus is on including areas which are almost exclusively residential in residential zones.

f The commercial districts, especially General Commercial Areas, should remain large enough to allow the commercial area some room for expansion.

3 Residential areas at the edges of commercial zones which are mixtures of single-family and multi-family structures should be designated Special Single-Family as shown on the Proposed Land Use Map as a basis for rezoning.

Housing in Commercial Areas

1 Some integration of residential uses into commercial areas should be encouraged through revision of the zoning ordinance.

a These revisions should include making existing housing, both freestanding and within existing structures, a compatible use in all commercial zoning districts, with provisions to allow their rebuilding under minimum building area and density restrictions similar to the Special Single-Family and Special Multi-Family categories.

b New housing should be permitted within existing or future commercial developments in areas designated on the Proposed Land Use Map as Mixed Use Areas under the restrictions included in the description of the Mixed Use category.

Elimination of the Commercial-Manufacturing District

1 The Commercial-Manufacturing District should be eliminated as a zoning district. The zoning ordinance should be changed so that uses which are now listed within the Commercial-

Manufacturing District are redistributed among other commercial and industrial zoning districts.

2. Depending on their present usage and location, areas presently zoned Commercial-Manufacturing should be designated as one of the residential, commercial, industrial, or mixed use categories as shown on the Proposed Land Use Map. The City should rezone these areas following the adoption and incorporation into the zoning regulations of modifications in the residential, industrial and commercial zone districts in which these areas are included.

New Commercial Areas

1. New commercial development should compliment existing commercial areas and increase the quality and range of commercial services and types of commercial facilities available in the City.

2. The City should carefully site and monitor new commercial development to minimize its negative impact on existing commercial areas.

3. More water-oriented commercial development should be encouraged.

Proposed Commercial Land Use Categories

Administrative-Professional

1. The proposed Administrative-Professional land use category should be essentially the same as the existing A-P, Administrative-Professional District.

2. This designation should be applied as shown on the Proposed Land Use Map and used as a basis for rezoning. The areas designated as Administrative-Professional on the map include areas in the present R-5 and R-6 districts where office and professional uses are presently clustered.

Neighborhood Commercial

1. The Neighborhood-Commercial land use category should be similar to the existing C-1, Neighborhood Business District.

   a. The uses permitted in neighborhood commercial areas should be primarily service and convenience commercial uses which serve the surrounding neighborhood.

2. The scale and appearance of neighborhood business areas should be different from that of other general commercial areas in the City. Efforts should be made to more closely integrate them with their surrounding neighborhoods and maintain a residential scale.

   a. Urban design studies of these neighborhood commercial areas should be undertaken.

   b. Neighborhood commercial areas should be given priority in the development of sign standards.

   c. The Design Review Board in its review of applications for these areas should make every effort to maintain residential scale.

3. This designation should be applied to all neighborhood commercial areas, as shown on the Proposed Land Use Map. The size of areas designated as neighborhood commercial is

somewhat smaller than the existing C-1 Zones. The residential areas at the edges of existing C-1 Zones are designated as Special Single-Family to establish a basis for rezoning to residential use.

General Commercial

1. The General Commercial designation should be similar to those of the existing C-2 Central Business District.

   a. These should be active, pedestrian oriented general commercial areas which draw patronage from the entire City.

   b. The landscaping, setbacks and signs of outdoor uses, such as automobile sales, should be strictly regulated.

   c. Separate criteria for landscaping setbacks and parking should be developed for the two types of General Commercial areas; the older, more developed, linear commercial areas of Park and Webster Streets and new commercial developments.

   d. Planned Development and site plan approval are recommended for the development of large parcels as General Commercial.

2. This designation should be applied to all existing and proposed General Commercial areas as shown on the Proposed Land Use Map. The size of the areas designated as General Commercial is different from the existing C-2 Zones.

   a. The residential areas at the edges of existing C-2 Zones are designated as Special Single-Family to establish a basis for rezoning to residential use.

   b. Parts of the existing C-M, M-1 and M-2 Zones, which are at present largely commercial in use or are most suitable for future commercial use, are included in the area designated as General Commercial in order to establish a basis for rezoning. Further intrusion of industrial uses in these areas should not be permitted.

Industrial Areas

1. The text of the Intermediate-Industrial District, M-1, should be amended to function as a light industrial zoning district.

2. Depending on their present land use, location, character and maintenance, areas presently zoned Industrial should be designated as one of the residential, commercial, industrial or mixed use categories. The following criteria should be applied:

   A. Existing areas in the industrial zones, which are primarily light industrial or suitable because of their location for future light industrial development, should be designated Light Industrial

   B. Areas which are presently heavy industrial should be designated Heavy Industrial.

C. Areas in the existing industrial zones should be designated as Residential under these circumstances:

(1) the Residential area should be a continuation of adjacent residential areas.

(2) it should be capable of renovation as housing.

(3) parcels in residential use on predominantly residential local streets are the most important to designate as Residential.

D. Areas in the industrial zones which are presently primarily commercial should be designated Commercial. The commercial area should be of a significant size, that is, more than just one or two commercial establishments located in an industrial zone to serve nearby industries.

E. Where an existing area is a mixture of uses and no one use predominates, the location, particularly whether it is on a major street, and the character of the surrounding uses, should be the basis for determining the proposed land use designation.

F. Vacant land in the existing zones, which is suitable because of its location for future use as either residential, commercial, mixed use or open space, should be designated for that use.

3. The characteristics of the proposed Heavy Industrial land use category should be similar to the existing M-2, General Industrial District. To improve the appearance of industrial uses, the M-2 General Industrial District regulations should be revised to include improved standards for setbacks, control of outdoor storage areas and buffer areas.

4. The boundaries of the existing General Industrial District should be changed to correspond to the Heavy Industrial designation on the Proposed Land Use Map. Only areas presently used for heavy industry should remain within the Heavy Industrial zone.

5. Areas presently zoned M-2 which are not used for heavy industry should be designated as another land use, depending on their existing use and location, as shown on the Proposed Land Use Map. The City should rezone these areas following the adoption and incorporation into the zoning regulations of modifications in the residential, industrial, and commercial zone districts in which these areas are included.

Light Industrial

1. The new Light Industrial category should include most of the light industrial uses now contained in the C-M, Commercial-Manufacturing, and M-1, Intermediate Industrial districts, as well as offices, administrative, heavy commercial, and some retail commercial uses, particularly land consumptive retail uses which require substantial storage areas. Compatible public and semi-public uses would be allowed.

2. Standards should be developed governing setbacks, parking, land coverage, control and screening of outdoor uses, landscaping, and buffering. Planned Development should be required of larger parcels.

3. To insure that adjacent uses are properly buffered from light industrial areas:

a. Landscaped buffers should be required between light industrial and adjacent areas. This is particularly important between residential and light industrial areas.

b. Industrial uses should be in enclosed buildings within a landscaped setting.

c. Light industrial uses with outdoor storage of work areas should be confined to locations separated from the City's residential neighborhoods. Where outdoor storage is permitted, it should be screened.

d. This designation should be applied to existing and proposed light industrial areas as shown on the Proposed Land Use Map.

4. The Light Industrial category should not allow any uses which would be deleterious to nearby neighborhoods because of odor, fumes, dust, smoke, noise, or pollution, or that would be hazardous because of danger of fire or explosion.

5. Uses within the Light Industrial category should include, but need not be limited to, light manufacturing, processing, warehousing, storage, wholesale, office, laboratory, professional, research, and development activities.

Mixed Use Areas

1. The Mixed Use category has the following components:

   a. A mixed-use development should include at least three of the following uses, or others determined appropriate by the Planning Board, plus open space: office, retail and shopping, residential and recreational. The uses should occur in an economic balance that considers the project's economic contribution to the City.

   b. The residential density in a mixed use area should range between 0 and 17.5 dwelling units per acre.

   c. The different elements and land uses within mixed use areas should be linked by landscaped pedestrian walkways.

   d. Mixed use developments should develop in conformance with a coherent plan. The Planning Board should approve a master plan for mixed use developments which describes the type and scale of uses and their locations before any portion of this site is approved for mixed use.

2. This Mixed Use designation should be applied as shown on the Proposed Land Use Map and implemented by amendment to the Zoning Ordinance.

3. In order to promote the maximum interaction between mixed uses, development should be clustered rather than dispersed in order to discourage the use of the automobile.

4. Each stage of development should consist of mixed uses and be presented as interrelated planned developments.

5. Initial stages of development should be monitored to determine if actual levels of activity correspond with projected levels of traffic and market absorption rates. Such information should be used to help determine precise standards for subsequent stages of development. Patterns of development which would exceed the traffic capacity of the Tubes should not be approved.

6. Developers of mixed use areas should have studies conducted to demonstrate the regional and local market capacity to support proposed and alternative uses. Such information shall be used by the City as an aid in the evaluation and assessment of any proposals.

Changes in the Zoning Ordinance

1. The City should expedite the process of public hearings on and adoption of modifications and changes in the zoning text to make the text consistent with the recommendations and policies of the Combined Land Use Plan.

2. Following development and adoption of changes in the zoning text, the City should initiate a program of rezoning to make the zoning district boundaries correspond to the recommendations of this plan as illustrated on the Proposed Land Use Plan Map.

General Open Space Recommendations

1. No surplus property should be disposed of by the City without first evaluating all potential open space uses; recreation, urban form, conservation, and public health and safety.

2. Abandoned railroad right-of-ways should be considered for use as bicycle and pedestrian paths, and landscaped buffer areas, as well as roadways.

3. The City should continue to seek out and encourage volunteer efforts in improving neighborhood and community open space and providing more open space.

4. Open spaces which serve several open space functions, such as the Golf Course, should be utilized whenever possible.

5. Evaluation of methods for open space acquisition should be ongoing.

Recreation

1. There should be a recreational open space facility, preferably a park, within a quarter mile radius of all residences.

2. The City should set an average goal of 4 acres per 1,000 residents for neighborhood and community park and recreation areas for newly developed areas.

3. Emphasis should be placed on developing nonschool open space, particularly at the neighborhood level, where deficiencies exist. The goal should be to develop nonschool open space at a ratio of 2/3 park to 1/3 school playground in new areas.

4 The City should work with the Alameda Unified School District to establish a uniform clear-cut policy regarding joint school/community recreation services. New schools and parks should be the product of a joint design.

5. Additional funding sources for after-school programs, such as the Community Services Tax, should be examined further.

6. In those neighborhoods where open space deficiencies exist, surveys should be made to

determine if any vacant parcels exist which could be considered for parks, even if they could only accommodate mini-parks, tot-lots or community gardens. Surplus property of public agencies and public utilities should be monitored for this purpose as well. This is especially important if the excess property is a school site that has been providing open space.

7. Design of new parks should consider linkages to other public facilities, such as schools, transit stops, and shopping centers.

8. Efforts to develop bicycle and pedestrain trails should be continued and expanded, where needed, to link residential areas to open space and to tie open space areas together.

Urban Form

1. Public facilities should have an upgrading influence on their surroundings and contribute to a positive identity for the areas in which they are located.

   a. Landscaped form giving open space should be a component of all new public facilities.

   b. The visual appearance of existing public facilities should be enhanced by landscaping.

2. A master street tree program should be developed which would include programs to replant and revitalize street trees in those areas where deficiencies exist, and to identify appropriate street trees.

3. Major common open space in single-family residential developments should be related to the amount of reduced private backyard space.

4. Open space should be used to provide separation between buildings.

5. Open space and landscaping should be used within the public right-of-way and in conjunction with new development located at the City's entrances.

6. Open space should be used whenever possible to buffer residential uses from industrial areas.

7. Open space buffering should be incorporated into the design of Patton Way and Atlantic Avenue.

8. The use of native and drought resistant plant materials should be encouraged to conserve water. Indigenous and drought resistant plant materials should be used in a manner which is harmonious and compatible with Alameda's existing plant materials.

Conservation of Natural Resources

1. The City's natural resources should be protected. The City should require adequate open space to protect its natural resources, particularly marshes, mudflats, and bird habitats along the shore.

2. The City should encourage and undertake educational programs to inform Alamedans of the City's natural history and its natural resources.

3. The City should continue to prohibit additional filling of its surrounding waters.

4. Dredging for sand, oyster shells, or channel clearance should be monitored carefully by the City, the Army Corps of Engineers, and BCDC.

5. Rezoning of water areas and adjoining public access and shoreline to Open Space should be completed. The Open Space Zone should be reviewed to determine appropriate water uses.

Health and Safety

1. Open space should be provided as called for in the City's Airport Safety Element.

2. Noise impacts from all sources should be a consideration in the review of all new development to determine where increased open space, such as a larger setback along heavily traveled streets, may be needed.

Shoreline Open Space

1. The trend toward private use of publicly owned shoreline should be stopped.

2. The City should continue working closely with BCDC and EBRPD to integrate and preserve shoreline open space.

3. New development along the shoreline should be required to provide continuous shoreline open space, as well as public access to the shoreline.

4. The City should work closely with BCDC and EBRPD at the beginning of the development process for new areas to determine appropriate shoreline access.

5. Every effort should be made to work with federal, state and regional agencies to provide methods and funds to stabilize the erosion of the South Shore beach.

6. All development projects, both public and private, should provide orientation to water views for both the users of the project and the public whenever a potential water view exists. Visual easements should be secured by the City, where needed, to insure maintaining these views.

7. Shoreline open space should be designed to define the difference between public and private areas.

   a. Fences or other physical or psychological impediments to public access to publicly owned land should be removed or altered.

   b. The Shoreline Open Space Report in the Implementation Program should evaluate these methods.

8. The Shoreline Open Space Report of the Implementation Program should include a survey of methods of making shoreline open space available to the public and an analysis of how the methods work.

9. The City should establish a program or plan to assert the public's interests in privately used public shoreline.

General Circulation Recommendations

Access to the Island

1. The capacity of approaches to the island should not be increased or new approaches to Alameda built if new traffic pressure on residential areas would be created.

2. Alameda should orient its land use and circulation proposals to the limited access it has as an island.

Protecting Residential Uses from Traffic

1. Nonresidential bypass roads should be created in undeveloped areas, Bay Farm Island and the Estuary, to protect existing neighborhoods and new residential areas from the impact of traffic. Future residential development should be sited at enough distance from these roads to shield residences from noise and other impacts of traffic.

2. An east-west nonresidential road should be developed along the Estuary utilizing either of the options described in the Estuary Section. This road should be designated as a truck route.

3. The use of residentially bordered streets to carry large volumes of traffic should be discouraged.

   a. Traffic should be diverted from residential streets if alternative, preferable nonresidential, streets are available to handle diverted traffic.

   b. A variety of traffic control measures should be permitted to create an improved pedestrian environment around schools and parks.

   c. Techniques which reduce the speed and volume of traffic should be considered after specific studies of problem areas are completed and if residents of the streets are in support of traffic diversion and speed reduction.

   d. There should be no widening of existing residential streets.

e. No additional residential streets should be designated truck routes.

4. The City of Alameda should actively promote implementation of a crossing of the San Leandro Bay as an alternative to increased congestion in the East End and Bay Farm Island.

5. Elimination of street parking spaces for improved traffic flow on residential streets should be discouraged, subject to meeting the traffic needs of the entire city.

6. Traffic control, such as timing of traffic signals and posting of visible speed limits, should be supplemented with enforcement by police.

Public Transit

1. The City should work with AC Transit to achieve the following:

   a. Development of bus routes within the Northside and Estuary areas.

   b. Increased frequency of bus service to Bay Farm Island and development of service to new developments on Bay Farm Island.

   c. Introduction of smaller, lighter buses, such as mini-buses, which are suitable for residential streets.

   d. Development of frequent connections to BART from all parts of the City.

   e. Development of service for people with special transportation needs, such as service to senior citizen programs.

   f. Publicizing and encouraging diversion to transit by commuters, both those who work and live in the City. Major employers should be involved in this effort; the NAS should have priority as the City's largest employer.

   g. Experimentation and development of other inducements to transit use, such as fare discounts.

   h. Bus routes should be reevaluated for efficiency of timing and location.

2. The City should encourage the use of public transit in new developments. New residential, commercial and industrial developments should be designed to promote the use of buses.

   a. Compact development which can be easily served by mass transit should be encouraged.

   b. Bus turnouts and comfortable bus shelters should be provided in new areas with minimal impact on adjacent residences.

3. The City should encourage developers of new areas to study and undertake the use of private buses to minimize the traffic impact of their developments on the existing community. Mini-bus connections to BART could be considered, for example.

4. Bus lanes should be considered to allow buses to bypass waiting vehicles and provide a time saving for buses during periods of congestion.

Car Pools and Alternative Transportation Systems

1. The City should work with Caltrans, employers, new developers, and others to publicize and encourage car and van pooling.

2. The administrators of the Naval Air Station and College of Alameda should encourage the use of carpools and van pools among staff and students respectively as a means of reducing the use of private vehicles.

3. Broaden transportation alternatives by encouraging the use of vans and buses by large employers or groups of employers to provide vans or buses for employees. This system may connect with BART or AC express buses, or relate to centers near employee residences.

4. Encourage use of private transit where public transit does not exist.

5. Develop a shuttle service to move shoppers between the three major shopping areas, i.e., Park Street, Webster Street, South Shore and Fernside.

Bicycle Circulation

1. The Bike Route Master Plan should be implemented. Bikeways recommended in this plan for new developments should be included in the Bike Route Master Plan.

   a. The bicycle route master plan should be revised to provide for a future off-street bike path along Doolittle Drive, and to avoid establishing on-street bikeways on streets with existing volumes of 15,000 or more.

2. On-street bikeways should be acceptable along most roads, though separate, off-street bikeways could be considered adjacent to streets which carry significant amounts of truck traffic.

3. Parking should be prohibited along new streets to on-street bikeways.

4. Bikeways should be large enough and designed to minimize conflicts between pedestrians and bicyclists and protect the safety and rights of pedestrians.

5. The City should continue its community education program to encourage bicycle use and safety. Information should be published on bicycle laws and safety, the rights of pedestrians, as well as bike route locations.

6. The City should develop and implement a program for maintaining and cleaning bikeways.

7. Bicycle parking and locking facilities should be improved and more provided.

   a. Existing bicycle parking facilities should be improved where necessary to insure bicycle security.

   b. Bike lockers or secure bike racks should be provided near public buildings, in parks, and around shopping and commercial areas. Secure, fenced bicycle storage areas should be provided at schools.

c. Bike parking should be without cost to the cyclist. Financing sources such as bike license fees and parking ticket and meter revenues should be considered.

8. The City should work with Caltrans to add a bike path to the Bay Farm Island bridge that would be in addition to the existing pedestrian walkway. All possible outside funding sources should be investigated, with the assistance of MTC.

Railroads

1. The City should monitor the availability of railroad lines. Abandoned right-of-ways should be considered for use as bike and pedestrian paths or development of small passenger railroads or other circulation systems and/or buffering open space areas.

2. Encourage use of railroad lines to handle freight in place of trucks.

Motorized Vehicles - Motorcycles, Motor Scooters, Mopeds, etc.

1. A new ordinance should be developed which sets noise level limits for motorized vehicles operating within the City. The ordinance should contain enforcement measures.

   a. Prohibit the use of modified exhaust systems through active police enforcement.

   b. Active enforcement with illegal motorists.

Pedestrians

1. Pedestrian access should be considered equal with vehicle access when reviewing development applications and public projects.

2. Pedestrian access should be provided and encouraged on all bridges.

   a. Pedestrian access should be facilitated from the bridge to the sidewalk, particularly at the Miller-Sweeney Bridge at Tilden Way.

3. Pedestrian access should be integrated into all parking lots, particularly at shopping centers, through the use of such methods as:

   a. Pedestrian esplanades with landscaping and textured paving to connect shopping and business areas with on-street sidewalks.

   b. Signs to delineate pedestrian crossings, particularly where pedestrian crossings intersect driveways.

4. Particular attention should be paid to providing for people with limited mobility, including the handicapped, the elderly and people with small children and strollers.

ISSUES AND RECOMMENDATIONS FOR PLANNING AREAS

Introduction

This section of the Combined Land Use Plan describes the issues and recommendations for specific planning areas in the City. Fig. 27 shows the planning area boundaries. The discussions of issues expand upon the description of general land use, open space, and circulation issues in the earlier section of the report. In addition, specific land use, open space and circulation recommendations are made for each planning area.

Proposed Land Use Plan Map

The Proposed Land Use Plan Map (see Fig. 26, back pocket) illustrates the land use, open space, and circulation recommendations for these areas, that is, those recommendations which can be expressed graphically. The boundaries on this map are definite for developed sections of this city. However, the map is small so it may be difficult to determine the exact lot boundaries. More precise lot by lot information on these boundaries is available from the Planning Department for critical areas: the exact boundaries of the proposed commercial areas and the residential areas within commercial zones to be reclassified as residential, for instance.

In areas which are substantially undeveloped, boundaries on the Proposed Land Use Map are not firm. The land use designations indicate the City's intent, but exact boundaries for these areas are not defined. The policies contained in the recommendation section for these areas are designed to guide the development of these areas.

For some areas, particularly Bay Farm Island, other graphics beside the Proposed Land Use Map illustrate the recommendations in more detail. Likewise, for those graphics, the boundaries and locations of recommendations are much firmer for developed than undeveloped areas.

Central Alameda

Central Alameda area is defined by Webster Street in the west; the boundaries of the R-1 District in the east; Lincoln Avenue to the north and the lagoons to the south. This large area can be subdivided into four distinct neighborhoods which have somewhat different characteristics and planning problems: the Gold Coast, South Central, East Central, and Central neighborhoods.

Gold Coast

The Gold Coast is predominantly single-family homes. The area extends from Encinal Avenue in the north to the lagoon in the south and from Union Street in the east to Webster Street in the west (see fig. 27, p. 113).

Land Use Issues

The Gold Coast area originally extended east along the original bayfront, but apartment zoning was applied to the area east of Union Street, and it began to develop a different character. The Gold Coast neighborhood is now roughly synonymous with the area of R-1 zoning north of the lagoon. Average densities are about 9 units per net acre, somewhat higher than could be achieved under the present zoning regulations. Although the area was subdivided in the 1870's, it was not completely developed until the 1930's, and it reflects a mix of building styles. There was little tract development in the area, so each house presents unique characteristics. The R-1 zoning has helped to preserve the single-family housing in the area and prevented the development of multi-family structures seen elsewhere in Central Alameda.

Open Space Issues

The area has one park, Franklin Park, which has a tennis court, play equipment, and a private swim center. The park contains mature vegetation which contributes a great deal to the physical appearance of neighboring streets. However, while traffic volumes on surrounding streets are not high, the configuration of the streets encourages high speeds and consequent noise in an area with low ambient noise levels.

Circulation Issues

The Gold Cost is ringed by heavily traveled streets, all of which are principally bordered by residential uses. Central Avenue carries over 10,000 cars per day, while Grand Street carries 6,600. Within the area, only San Antonio Avenue carries more than 1,000 cars per day. All of the north-south streets end at the lagoon, discouraging further traffic intrusion. There are a number of AC Transit lines through the Gold Coast. The large buses occasionally block traffic and have difficulty negotiating some of the narrower streets and intersections.

South Central

The South Central area extends from Encinal Avenue in the north to the lagoon in the south; and from Park Street in the east to Union Street in the west.

PLANNING AREAS

fig. 27

1/1/76

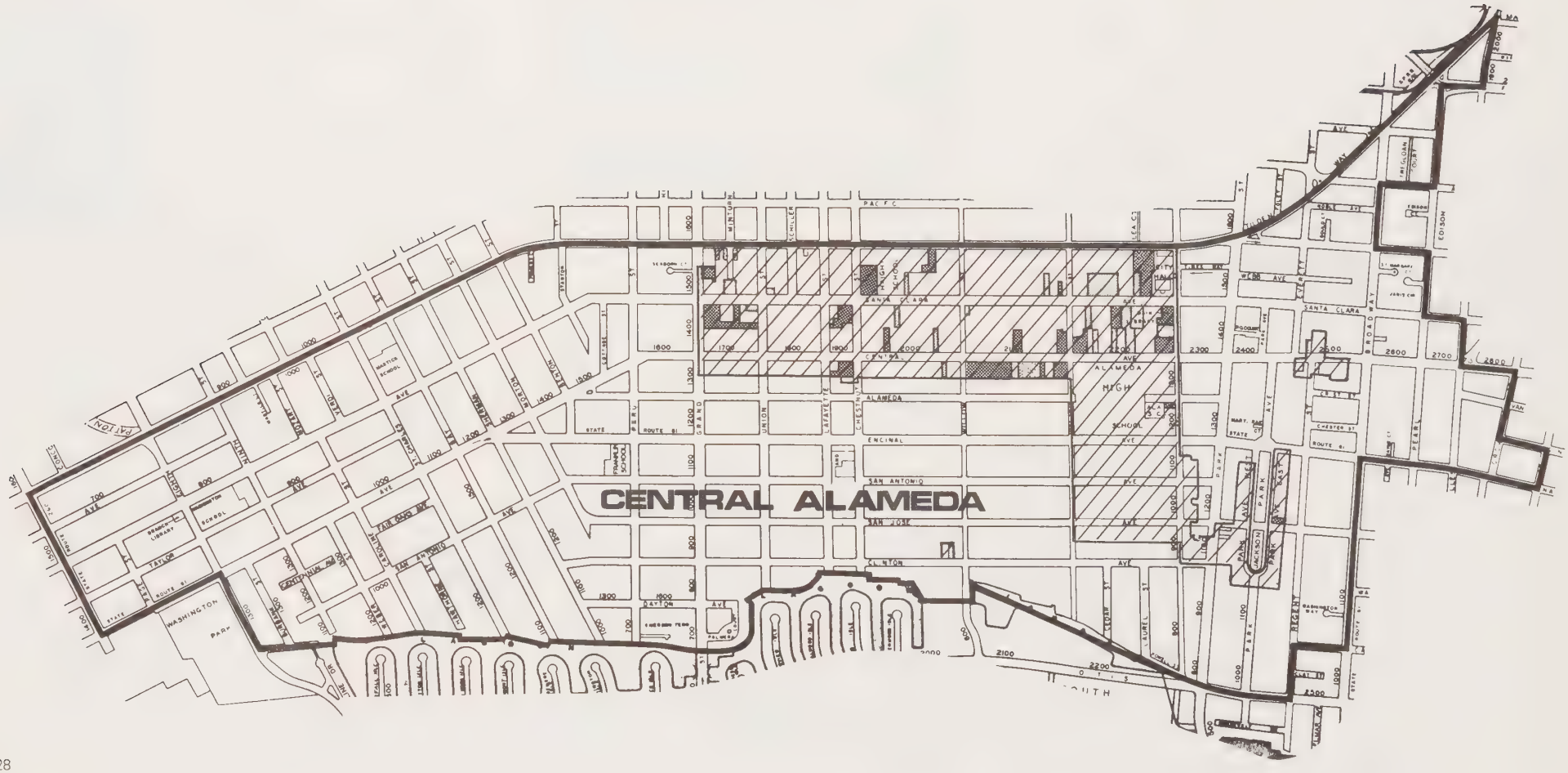


fig. 28
5/1/77

NON-RESIDENTIAL USES IN R-5 & R-6 ZONES IN CENTRAL ALAMEDA

KEY

- INSTITUTIONS
- OFFICES
- RETAIL COMMERCIAL
- R-5 & R-6 ZONES

0 500 1000 2000
SCALE IN FEET

Land Use Issues

This area was once similar in housing type to the Gold Coast. However, as early as 1940 most of the area was zoned for apartments and in 1958 the zoning ordinance, still current, applied a mixture of R-4, R-5, and R-6 zoning. The area still retains much of its original character but, because of the high density zoning, many older homes have been demolished and replaced by higher density multi-family structures. The area now has an average density of 19 units per net acre and approximately 75% of the housing units are multi-family. In recent years, many of the old homes which were converted into apartments have been reverting to single-family use. This trend will probably continue as the market value of single-family homes escalates. While it will tend to reduce the availability of moderate-cost rental and ownership units in the area, this process may cause improvements in housing maintenance, traffic, and parking. However, the preservation of these older units cannot be guaranteed by down-zoning or market conditions alone: down-zoning would not prevent the replacement of historically/architecturally significant buildings by new single-family houses; older areas may require some additional historic or design controls to protect their character.

The area has one school complex, St. Joseph's and Notre Dame, as well as the Alameda Hospital. There is a small area of R-5 zoning adjacent to the hospital which contains a block of medical offices as well as residential uses. There is one neighborhood commercial area in the South Central area, adjacent to St. Joseph's School. As with many other neighborhood centers in the City, this one grew around one of the old train stops. It contains a variety of neighborhood stores, as well as ten residential parcels. Some of the older commercial structures have historic significance.

Open Space Issues

The South Central area itself has no parks. The nearest open spaces are Jackson Park to the east and Franklin Park to the west. The lagoon provides an element of open space, visible at the foot of the north-south streets. However, the water is inaccessible to the general public. A neighborhood park will eventually be provided through the future gift to the City of the 0.52 acre Meyers property at 2144 Alameda Avenue, which includes a large Victorian home, a smaller studio, and well maintained grounds. (The buildings must remain as a condition of the gift.)

Circulation Issues

This area is ringed by residential streets which carry relatively large volumes of traffic - Park Street (19,000 - 31,000), Grand Street (6,600), and Encinal Avenue (6,700 - 7,500) (see fig. 20, p. 80). However, unlike the Gold Coast, this area has more east-west avenues which channel traffic through the center of the neighborhood: Encinal, San Jose, and Clinton Avenues. This area, like most residential areas in the City is heavily impacted by traffic.

Central

Central Alameda extends from Park Street in the east to Webster Street in the west; and from Lincoln Avenue in the north to Encinal Avenue in the south.

Land Use Issues

The primary zoning classifications in this area are R-4 in the western portion, and R-5 and R-6 in the vicinity of City Hall. This area has the highest overall residential density in the City, ranging from 20 units per net acre in the R-4 Zone to 29 units per net acre in the R-6 Zone. (Profes-

sional offices and public facilities are permitted uses in the R-6 Zones and require a use permit in R-5.) The blocks immediately adjacent to Park Street are most heavily impacted but the mixture of commercial and institutional uses extends all the way to Grand Street (see fig. 28, p. 114). The majority of the institutional uses are either churches or clubs while most of the offices are medical/dental facilities. The retail commercial uses are principally car repair oriented, with few retail facilities in the area, and a number of mortuaries.

In addition to these nonresidential uses, this area has been heavily impacted by the development of large apartment buildings. These are found throughout the area but are most heavily concentrated in the R-5 and R-6 Zones. Despite the apartments and nonresidential uses, this area still contains some of the finest old houses in the City, as well as many outstanding public buildings. The area originally developed between 1870-1973 and the housing stock reflects the changes in style over this period.

There are three neighborhood commercial areas within Central Alameda. As with most of the other C-1 areas in the City, these neighborhood centers include residential uses within their boundaries. This is particularly true of the centers at Ninth Street and Central, and Ninth and Santa Clara. In some of these commercial areas, the residential uses evidence a maintenance investment.

Open Space Issues

There are no parks in the Central Area. The area does, however, have 10.2 acres of school open space. The closest parks are Buena Vista Park to the north and Washington Park to the south.

Circulation Issues

The area is impacted by heavily traveled east-west and north-south arterials. The most heavily traveled streets are Encinal Avenue (6,700-7,500 per day); Eighth Street (14,700 between Otis and Central per day); Lincoln Avenue (9,000-13,000 per day) (see fig. 20, p. 80 and fig. 23, p. 85). There are presently no nonresidential streets to which the traffic can be rerouted. The proposed Atlantic Avenue extension connecting Webster and Park Streets will be a new nonresidential east-west connector that will bring some relief to the east-west streets. Techniques to protect neighborhoods from traffic such as stop signs and diverters could be used on selected local streets to decrease the level or reduce the speed of traffic. However, such measures require careful study since traffic diverted from one residential street may impact another residential area.

There are a number of street widening projects already approved in this area. The section of Walnut Street between Encinal and Central Avenues is to be widened by 16' to improve circulation around Alameda High School. In addition, the City Engineering Department has plans for the widening of Oak Street from Lincoln Avenue to Encinal Avenue. The 4' widening will be funded from gas tax tunds, approved yearly. The project is being considered in separate segments. From Lincoln to Central Avenues, no right-of-way is needed, and Council approved funds in 1973 and 1975.

Plans for this section are 90% completed, but the project's timing is unclear due to delays in deciding on the undergrounding of utilities along the street. The section from Central Avenue to Encinal Avenue has also been funded and field work has started, but plans are only 10% completed. The 4' of needed right-of-way would be dedicated by the school district.

In addition to the Oak Street widening project, the City has plans for the development of Patton

Way, a connector extending from the Webster Street Tube, across Webster Street, and joining Eighth Street at its intersection with Lincoln. It is anticipated that Patton Way will divert a great deal of the through traffic from Webster Street to Patton Way - Eighth Street. CalTrans projection indicates that Patton Way, without Atlantic Avenue Extension, would add 3,000 cars daily to Eighth Street.* A crucial issue here is discouraging traffic from Patton Way from dispersing onto neighboring residential streets such as Haight, Santa Clara and Taylor Avenues in greater volumes than presently exist.

East Central

The East Central area extends from Park Street on the west to Pearl Street on the east; and from Blanding Avenue on the north to Otis Drive on the south. Its eastern edge is irregular, marking the boundary between the East End's R-1 zoning and the mixture of zone designations in the East Central Area.

Land Use Issues

The East Central neighborhood contains almost every zone district in the City. North of Tilden Way, the area is zoned M-1, M-2, and C-M, and the land use is predominantly a mixture of commercial, industrial, and residential uses. South of Tilden Way, the area is a mixture of R-2, R-4, and R-5 residential zones, with some neighborhood commercial areas and sections of residential land use which lie within the Park Street commercial area. The R-4 area is still dominated by single-family houses, although there are many apartments scattered throughout all zones. Some of the smaller R-5 Zones, particularly on Central Avenue close to Park Street, have been occupied by nonresidential uses. The East Central area has many historically and architecturally significant buildings. Along Park Avenue and Regent Street, there are a number of outstanding Victorian houses, while along Broadway, stucco bungalows and Swiss-style houses predominate.

There are two neighborhood commercial zones in the East Central area: one at the intersection of Versailles and Encinal Avenues, and the other at the southern end of the Park Street business district. The Versailles Avenue center contains a mixture of land uses, with over 50% of the parcels in residential use, 30% in commercial use, and the remainder institutional. In contrast, the Park Street C-1 area is dominated by commercial uses, with only one residential parcel.

Open Space Issues

The East Central area has one area of open space, Jackson Park. It contains benches, pedestrian paths, grassed areas, and a mixture of mature trees. In combination with the attractive houses along Park Avenue, this park provides a very pleasant relaxation area within walking distance of the business district. However, both its cleanliness and attractiveness have been adversely affected by the location of various fast-food outlets close to the park. There are no open spaces in the East Central area which contain active uses. The nearest open spaces for active use are Edison School Playground and Krusi Park.

Circulation Issues

This area is heavily impacted by traffic associated with the Park Street business area. Park Street carries over 15,000 vehicles per day over much of its length, increasing to over 30,000

*D.K. Goodrich, Consulting Traffic Engineer, May 1977

near the Park Street Bridge. Tilden Way carries between 10-15,000 vehicles per day, and Broadway just under 10,000; while east of Park Street, Otis Drive carries over 15,000 vehicles per day.

Most of the east-west streets in the area carry over 5,000 vehicles per day. The Engineering Department's 1976 traffic counts showed traffic in the East Central area on Encinal reached 7,500, Central 8,000, and Santa Clara 10,000. Lincoln at Park, where it turns into Tilden Way, carried over 13,000 vehicles according to the Engineering Department's 1977 traffic counts (see also fig. 20, p. 80 and fig. 23, p. 85).

The East Central area would most likely be heavily impacted by any project to slow or divert traffic from Park Street. It is probable that the area will experience increases in traffic due to development on Bay Farm Island, particularly on Broadway.

Land Use Recommendations

1. Areas currently zoned for single-family use should remain as single-family.

2. All portions of Alameda zoned R-2 through R-6 maintaining a predominantly residential character and mixtures of single-family and multi-family residences should be designated as Special Single-Family. Most of Central Alameda will fall in this category.

3. Residential uses currently located in commercially zoned areas along Park Street and Webster Street should also be designated Special Single-Family, as shown on the Proposed Land Use Map.

4. The boundaries for neighborhood commercial areas at Chestnut/Encinal, Morton/Encinal, Ninth/Central, Ninth/Santa Clara, Versailles/Encinal, and San Jose/Park should be changed as illustrated on the Proposed Land Use Map. Contiguous parcels zoned commercial but still in residential use should be designated Special Single-Family.

5. The area west of City Hall between Walnut and Oak and Lincoln and Encinal, where medical offices, commercial, and institutional uses are concentrated in residential zones, should be designated as an Administrative-Professional Area.

Open Space Recommendations

1. Central Alameda should be given priority for acqusition of new open space areas to the maximum extent possible. If vacant land becomes available in the area, it should be considered for open space use. This open space should include neighborhood and community parks, but community gardens, mini-parks, and other smaller open space uses should also be developed wherever possible.

2. The Meyers property at 2144 Alameda Avenue should be designated as a future neighborhood park, in accordance with the provisions of the gift, that require the buildings to remain.

3. Trees should be planted along those streets where the existing trees are less than adequate.

Circulation Recommendations

1. Measures should be considered to reduce, divert, and slow down the traffic on residential streets in Central Alameda, particularly when the nonresidential Atlantic Avenue Extension is developed.

   a. Local streets should be the first priority for the application of such techniques.

   b. Measures to divert and slow traffic should be considered to improve the pedestrian access and environment around parks and schools in Central Alameda, particularly Franklin Park.

   c. Signing along Tilden and Broadway should be reviewed.

Park Street

Land Use Issues

The Park Street district had its commercial beginnings around 1864 with the establishment of a railroad station on "Cohen's Line." The construction of the Park Street Bridge in 1902 eventually furnished the necessary vehicular traffic that contributed to the district's linear commercial development.

The district has grown into a commercial/industrial corridor that extends southerly from the Estuary, along Park Street, and terminates at the intersection of Park and San Jose Avenue. The district's easterly boundary is composed of Tilden Way, Everett Street and the 1400 block of Broadway and Park Avenue; its westerly boundary is Oak Street.

The visual corridor offered to people entering the community at Park Street Bridge is void of any characteristics capable of conveying a sense of community identity. The visual image is composed of excessive signage, a blend of traditional and nondescriptive architecture, and a potpourri of land uses. The Economic Development Task Force of the Goals Study recognized that many storefronts in the retail/commercial areas need improvement to further the development of these areas as pleasant shopping districts. Land uses within the district vary from general and intermediate industrial, commercial manufacturing, retail/service oriented business establishments to multiple residential uses which are widely distributed.

The zoning within the district progresses from industrial zoning at the bridge to C-M at Eagle Avenue to C-2 at Tilden Way, ending with C-1 zoning at the intersection of Park Street and San Antonio Avenue. The visual quality improves as one moves away from the bridge area.

The general and intermediate industrial land uses are concentrated along the Estuary and Blanding Avenue. A number of the uses along the Estuary have a maritime industrial base; others are involved in the production of products that are marketed nationally.

In 1975, the Alameda City Planning Board formed a subcommittee on downtown revitalization to study the promotion of commercial enterprise in Alameda. A study of a "target" area of Park Street resulted in a revitalization report which could form the basis for a precise plan for Park

Street. They analyzed the relationship between economic factors (i.e., sales increases) and issues of land use, circulation, and open space. Land use concerns focused on the need to unify the design of Park Street through storefront improvement with an overall theme, landscaping and use of a signage theme.

A major portion of the land uses in the industrial and commercial manufacturing district is oriented toward the sale and service of automobiles. This includes new car sales operations, used car lots, and small service garages. This is interspersed with small industrial operations and various commercial enterprises, along with some residential units. The profusion of outdoor uses for auto storage and display, garish signs, etc., is largely responsible for the general visual confusion of the area, and contributes to low maintenance of the surrounding areas.

The proliferation of signage from these various land uses along Park Street has created not only a sense of discontinuity in the quality of recognition of various business establishments, but also detracts from the overall community image. This lack of identity is the most often cited quality when assessing the success or failure of the perceptual quality of an urban environment composed of varied land uses. Still, the Park Street areas contain several buildings of historical note, such as those cited in "A Walking Tour of Alameda's Historical Downtown and Civic Center Districts."*

The central and neighborhood business districts are composed of retail and service oriented business establishments. This area has the potential to become a more attractive downtown-type shopping area.

Open Space Issues

The district has little usable open space other than the public access points along the Estuary at the Fernside Shopping Center, and there is little obvious opportunity for development of new, large, open spaces.

The Fernside Shopping Center offers the major portion of public access along the Estuary. Limited visual access to the public exists on either side of the Park Street Bridge with some potential for improvement, i.e., observation and fishing platforms. There basically is no usable open space within the commercial/retail center of the Park Street district. The encouragement of passive landscaped open areas consisting of street trees, special paved area with street furniture elements can, in themselves, create an overall civic identity. The downtown revitalization study suggested modifying intersection design and mid-block crossing to provide landscaped rest areas. The Economic Development Task Force of the Goals Study recognized that landscaping of existing retail areas would contribute to a more pleasant atmosphere.

Some cities have chosen to improve their downtown areas by closing off the main street and turning it into a mall. This improves the pedestrian environment and creates more open space. This is not recommended for Park Street for the reasons discussed in the Park Street circulation issues. However, the Downtown Revitalization Study did suggest some possible mall development of short east-west streets, such as Alameda Avenue, which carry a small traffic volume.

*Prepared by the Historical Advisory Commission of the City of Alameda, April 1977.

Circulation Issues

Traffic volumes for Park Street and the east-west cross streets are discussed in the Central Alameda section. Traffic flow on Park Street has been aided by the restriction of left turns on and off the street during the late afternoon. This program's success suggests that left turn lanes for traffic coming off the bridge before it reaches the main Park Street area should be considered, particularly since left turns for eastbound traffic are not always possible off Park Street farther on.

A one-way street and/or shopping mall would reduce traffic congestion and conflicts between vehicles and pedestrians, but the traffic would have to be diverted to residential streets. For example, Willow and Walnut Streets or Park and Walnut Streets have been suggested as one-way couplets to relieve Park Street. These residential streets carry very little traffic now. They would be severely impacted if connected to traffic streets. A similar problem, the impact of new traffic on residential streets, exists for other streets proposed as relief for Park Street traffic. In addition, comparing traffic volumes with Park Street's four lane capacity and low traffic growth rate (5% in ten years) minimizes the need for traffic reduction.

The availability of parking has long been an issue in the Park Street business district. A 1975 survey of Park Street merchants indicated that 72% considered parking a problem. Studies of parking in this area have indicated that the problem is not necessarily a lack of spaces overall.* An apparent lack may be caused by spaces not being close enough to the intensely used areas or because there is little turnover (cars park in spaces for long periods of time). Two approaches can be taken, either independently or together, to ease parking problems: decrease the automobile orientation and/or improve the allocation of parking spaces. Decreasing automobile orientation also has a lot to do with decreasing traffic generation in general: limiting the number of driveways in a block, discouraging drive-through windows, and controlling left turn movements.

The 1975 Park Street Survey indicated 61% favored development of pedestrian amenities in the shopping district. The report noted that ". . . the atmosphere of this public environment creates specific psychological effects on the people who pass through it. People are motivated to stay longer and walk farther within a pleasant environment . . ." **

Efficient improvement of public transit service has the potential for improving parking. Better transit connections with points outside of Alameda also have the potential to bring some shoppers into the Park Street area. Establishing an additional AC Transit line from BART/Fruitvale over the Miller-Sweeney Bridge to Park Street could also provide a direct connection to the Fernside Shopping Center from the other points in Alameda which is not presently available. Present service from the Fruitvale BART station to Park Street runs 20-30 minutes apart, which could be improved by such additional service. (The Fruitvale-Bay Farm Island run occurs at about the same time and intervals.) This would also provide better connections along the 51-58 line to Webster Street and through the Tubes. The 51-58 line runs at intervals of about 7 to 15 minutes. However, as was discussed in the Circulation Section, increased service or additional runs are most likely to result from high levels of patronage on existing lines.

**Park Street Revitalization Plan:* City of Alameda Planning Department (October 1976) (Draft)

***Parking Report, Alameda, California, prepared by D. Jackson Faustman, Consulting Traffic Engineer, for the City of Alameda, February 14, 1973.

The Revitalization Study could also investigate the possibility of establishing a mini-bus line in cooperation with commercial uses for shoppers as well as employees in the Park Street District. This could also be used as an interim measure until AC Transit service can be expanded and could be continued to complement AC service. (There presently is a shortage of AC Transit buses within the whole AC Transit system.)

Land Use Recommendations

1. Reduce the area of the C-2 Zone to include as general commercial land which is presently in commercial usage as shown on the Proposed Land Use Map.

2. Residential areas which are presently zoned C-2 should be designated Special Single-Family as shown on the Proposed Land Use Map.

3. Eliminate the C-M Zone and revise the land use designation to allow for residential, commercial, industrial, and open space uses as shown on the Proposed Land Use Map in the area presently zoned C-M.

4. New outdoor storage uses should not be permitted, but uses such as outdoor sales areas should still be allowed with special landscaping and setback provisions.

5. Encourage the assignment of historical designations to individual buildings or the establishment of special historical districts.

6. The Park Street Revitalization Study should be formalized into a precise plan by a joint effort of the business community and the Planning Department. This study should concentrate on a systematic program to regenerate the Park Street area, and should address rehabilitation, urban design, signing, landscaping, parking, economic, social and physical problems, and should develop an implementation program.

Open Space Recommendations

1. "Mini" parks and plazas should be developed either as a portion of new property development or by acquisition of small "passed-over" parcels of land by the City.

2. Landscaping and open space criteria should be developed for new commercial development along Park Street, including street trees, street furniture, etc.

3. A strong and consistent street tree planting program should be continued along Park Street and adjacent cross streets.

Circulation Recommendations

1. Accommodations should be considered in the precise plan for Park Street for east bound left turn movements for traffic coming across the Park Street Bridge before it reaches the central portion of the business district.

2. Additional public transit service should be sought in cooperation with AC Transit, particularly to link Park Street with the Fernside Shopping Center and BART/Fruitvale.

3. Parking solutions should be developed in conjunction with a Park Street precise plan.

Northside

The Northside, as indicated on Fig. 27, extends north of Lincoln Avenue between Webster Street and Park Street. Its northern edge is defined by the limits of residential development. The industrial uses to the north are discussed in the Estuary Section.

Land Use Issues

The Northside is one of the oldest residential areas in the City. Comparing it to other older areas which have been zoned for apartments, the Northside has been the least impacted by multi-family zoning. The Northside west of Sherman Street is zoned R-2; east of Sherman Street it is zoned R-3 and R-4. Some multi-family structures have been built in the Northside, but not nearly as many as in other areas with the same zoning. Many of the multi-family buildings were constructed on the blocks between Chestnut Street and Park Street, where the lots were larger and more developable. A great deal of the older housing stock remains which are typically Victorian cottages or bungalows. This particular historical and residential scale of the Northside area is unique in Alameda.

There is tremendous variation in maintenance and landscaping from block to block. Most of the area has medium maintenance, but, like many areas of the island, the amount of private housing rehabilitation is making a major impact on the appearance of the neighborhood. The City has established a Housing Conservation Program to assist this private rehabilitation effort.

The Makassar Strait Village low income housing development faces onto Webster Street, and is heavily impacted by traffic noise. In addition, Patton Way and Atlantic Avenue will, when developed, surround this parcel with heavily traveled streets, so it is not a desirable location for any residential use. The City recognizes the need to preserve and expand the supply of housing available to people of low and moderate-income and is willing to respond positively to reasonable proposals developed by the Housing Authority for rehabilitation or new construction of public housing on this site. The southern portion of the project adjacent to Eagle Avenue has been recently rebuilt with modular units. Several blocks to the east, the Makassar Strait Village on Parrot Street is in the process of clearance and rebuilding.

There are five C-1 areas within the Northside: Lincoln Avenue/Ninth Street; Lincoln Avenue/Bay Street; Lincoln Avenue/Stanton Street; Lincoln Avenue/Grand Street; and Lincoln Avenue/Willow Street. There are currently three small and two large C-M Zones in the North-

side. Surveys of land use indicate that the predominant use within each area is residential with some commercial and industrial uses.

There is no visual buffer between the Northside residential area and the heavy industries to the north. M-1 zoning appears to have been intended to group lower-intensity industrial uses adjacent to residential uses, but surveys of housing maintenance in these areas indicate a relationship between industrial land use and zoning and poor housing condition in neighboring residential uses.

Open Space Issues

The Northside neighborhood has two parks: McKinley Park in the eastern end of the neighborhood, and the new Buena Vista Park oriented to the central and western portions of the area.

The row of houses on Pacific Avenue adjacent to Buena Vista Park is a cohesive group of buildings that work together as a unit and is an outstanding example of Victorian configuration and detailing. They are the largest single row of Victorian cottages in the City without major alterations and unified architectural character. They are one of the most pleasant features of a potentially outstanding neighborhood.

These houses enhance the park. Inclusion of the houses into the park can help overcome the newness and immature vegetation of the park and integrate the park into the neighborhood. Incorporating these houses into plans for the park can make the relation between the park and surrounding residential area much stronger.

The City is currently constructing a neighborhood building adjacent to the most easterly of the houses, facing onto Pacific Avenue. At some future date it may be desirable and feasible to expand this and other park facilities. To permit this expansion, it may be necessary to acquire portions of the rear yards of all the houses, as well as a portion of the side yard of the most easterly house (1321 Pacific Avenue). The possibility of moving them as a group would be dependent on finding a large enough parcel close by.

Even with Buena Vista Park, there are large portions of the neighborhood which are not easily accessible to either park. Since the neighborhood is largely built up, the only increases in available open space will come from the redevelopment of the Estuary and the Makassar Strait Village site on Webster Street.

Circulation Issues

More serious than the land use impacts are the associated traffic impacts of industrial uses. Buena Vista Avenue is a residential street which carries over 10,000 vehicles per day over much of its length. This heavy flow is aggravated by the fact that many of these vehicles are large trucks, particularly on the section between Grand Street and Sherman Street. Lincoln Avenue also carries over 5,000 vehicles per day over much of its length. This heavy traffic also impacts many of the side streets, and it can be anticipated that new development along the Estuary will aggravate the situation. A number of alternate routes have been proposed to handle the anticipated increase in traffic: Patton Way and Atlantic Avenue Extension, which will be examined in the Estuary Section.

Land Use Recommendations

1. The Makassar Strait housing projects on Parrot Street and Eagle Avenue should be designated Special Multi-Family.

2. All of the existing residential zones in the Northside should be designated Special Single-Family.

3. Residential areas within C-1 should be designated Special Single-Family as shown on the Proposed Land Use Map.

4. Areas of C-M zoning should be eliminated. Areas presently zoned C-M should be designated Commercial, Residential, or Light Industrial as shown on the Proposed Land Use Map.

   a. Webster Street: The C-M zoning east of Webster Street should be divided between General Commercial, Neighborhood Commercial, and Special Single-Family designations.

   b. Thau Way/Atlantic Avenue: This area should be designated Special Single-Family.

   c. Buena Vista Avenue/Bay Street: This area should be designated Special Single-Family.

   d. Buena Vista Avenue/Grand Street: This area should be designated Light Industrial.

   e. Park Street: The C-M zoning west of Park Street should be divided between General Commercial and Special Single-Family.

5. Residential areas of the Northside should be buffered from heavy industry by landscaped buffers and transitional commercial and light industrial uses.

Open Space Recommendations

1. New open space should be developed by the City in the Northside. Mini-parks and community gardens would be appropriate as new open spaces. Open space to be provided as part of the Estuary development should be oriented for use by the Northside neighborhood.

2. The Makassar Strait Village Webster Street location should be zoned for open space. The use of this site as open space would also relate to the system of park and open space proposed as part of the Estuary development, as well as the proposed Atlantic Bicycle Path and the redesigned Webster Street/Atlantic Avenue intersection. It could also act as a buffer to Patton Way.

3. The program of street tree planting in the Northside should be continued with emphasis on the use of one tree species per street to unify the appearance, and the planting of trees which, at maturity, will have character in scale with the street.

4. The row of houses on Pacific Avenue adjacent to Buena Vista Park should be incorporated into plans for the Buena Vista Park, unless they can be moved and relocated as a group. Another alternative would include demolishing the apartment building to the west of the houses, and moving 1321 Pacific to its location. These proposals would be contingent upon available funds.

Circulation Recommendations

1. The proposed Atlantic Avenue Extension should become Alameda's truck route to industrial uses along the Estuary. The truck route designation should be removed from Buena Vista Avenue.

2. The proposed Atlantic Avenue Extension will be the major means of diverting trucks and cars off Northside streets. New developments along the Estuary will create more traffic in the Northside areas however, so other techniques to protect neighborhood streets, such as diverters, should augment the Atlantic Avenue Extension. The type of technique to be used will depend on the specific situation.

3. Patton Way should be extensively buffered with landscaping, particularly along the section from Makassar Village to Lincoln Avenue where no road currently exists.

East End

This area extends from the Tidal Canal in the north to the lagoon in the south; and from San Leandro Bay in the east to approximately Pearl Street in the west. The western boundary is irregular, following the interface of the R-1, Single-Family, and R-4 Zones.

Land Use Issues

The East End was one of the early centers of development in Alameda. The Alameda Township was established south of Encinal Avenue and east of Versailles Avenue in 1853. Its extent can still be determined from the map, with its small, approximately square blocks. Large areas of the Township and adjacent lands were not developed until long after initial subdivision, so the area contains a mix of house types with the 1920's stucco style predominant. The East End also contains the Fernside area, the last major tract to be developed on the original Island. The Fernside District has a distinctive nonrectangular street pattern and a unifying Spanish Colonial style to the houses. Except for the small area east of High Street, between Encinal Avenue and Central Avenue, almost the entire area is, and always has been, zoned for single-family development. This land use and zoning stability has provided the environment within which a pleasant residential area could develop. By contrast, the areas around Briggs and Sterling Avenues have historically been zoned higher density; related to the train stop at Encinal Avenue and High Street, and the attendant commercial uses. In 1958, zoning along Briggs Avenue was raised from R-2 to R-4. Since 1958, apartments and condominiums have developed on the street, interspersing themselves between the older houses. The contrast between the character and quality of this street and the surrounding intact preserved streets provides probably the most forceful example in the City of the impact of high zoning on a single-family neighborhood.

There are two small areas of R-5 zoning adjacent to the C-1, Neighborhood Commercial zones, along High Street (see fig. 7, p. 27). These zones contain a mixture of residential and nonresidential uses fairly typical of the types of uses found in R-5 Zones adjacent to commercial zones; offices, a mortuary, some retail commercial, and a theatre. The two C-1 com-

mercial zones themselves contain commercial uses and some residential uses. The C-1 Zone at the corner of Encinal and High Street is larger than the existing commercial areas. It contains several residences on the south side of Encinal Avenue (see fig. 9, p. 35).

There are several parcels of undeveloped land in the East End. The 8 acre parcel along the water south of the new Lincoln School is one (see fig. 15, p. 55). The former Lincoln School site on Central Avenue (see fig. 15, p. 55), is in the process of being vacated.

Open Space Issues

The East End has over 32 acres of open spaces and parks, including Edison Park, Lincoln Park, Krusi Park, as well as playgrounds at Otis School, Edison School, and the new Lincoln School. The parks all contain mature vegetation and are positive visual components of the area. Lincoln School also has a nature park planned for along the shoreline. Despite the East End's proximity to San Leandro Bay and the Tidal Canal, the water is entirely hidden and virtually inaccessible. Except for the new Lincoln School and the adjacent vacant property, the entire shoreline is occupied with homes which have boat docks and other structures, some of which encroach on publicly owned land along the water behind the houses.

There are City owned access points to the water along Fernside and East Shore Drive. Many have become a nuisance to the adjacent residents and have been blocked off (see Shoreline Access Survey, fig. 18, p. 73). The problems stem from the small size of the paths. The public has no choice but to be in close proximity to someone's private back yard. The access points at the end of Liberty and Central Avenues are wider, are open and accessible, and have been maintained as public access.

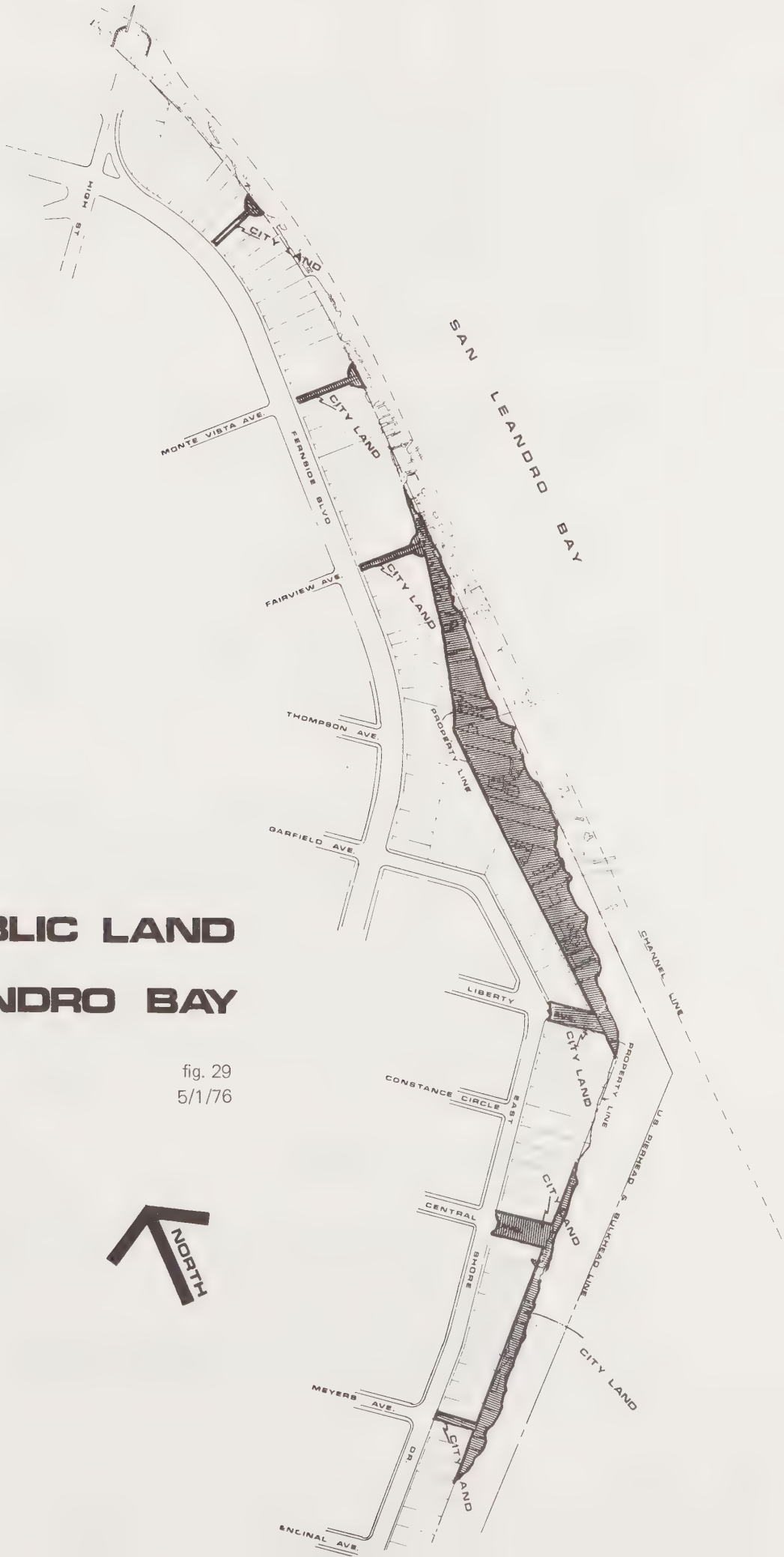
It may not be legally possible for the City to abandon the public access right-of-way, and two of the access points also serve as storm drainage easements. Maintaining the status quo would mean continuing to allow gates across the narrow paths and concentrating efforts for maintenance and use on the Liberty and Central access points. (Additional discussion of shoreline access in this area can be found in the discussion of Shoreline Open Space.)

It is important to note the larger block of land behind the houses (see fig. 29, p. 128), is also publicly owned. The northern half is part of the Tidal Canal and is owned by the Federal Government. The southern half is owned by the City. Adjacent property owners have encroached onto the publicly owned land with docks, landscaping, and other forms of back yard improvements. Redeeming full public use of the land would be a long and involved procedure. Efforts for developing shoreline access might be more fruitful in other locations.

Circulation Issues

Circulation issues in the East End have long been dominated by concern about traffic levels on High Street, and the questions of whether the levels can and/or should be reduced by extending Fernside Blvd. to Otis Dr. The relationship between traffic levels in the East End, the High Street Bridge, and the Bay Farm Island Bridge has also been an issue.

This culminated in a voter initiative, Measure E, which was passed by the voters in March 1977. It was a vote mandating that the City extend Fernside to Otis as a two-way, four-lane street. Before the election, the City released a staff analysis of East End circulation along with



EXISTING PUBLIC LAND AT SAN LEANDRO BAY

fig. 29
5/1/76

0 200 400 800
SCALE IN FEET

NORTH

an environmental impact analysis conducted by the Environmental Impact Planning Corporation (EIP). The following analysis is taken from those reports:

Anticipated Traffic Growth

High Street is already near or at peak hour capacity for Service Level C, the service level at which streets are designed to operate. Much of the present traffic is locally generated, only 20-30% is through traffic going the entire length of High Street between the bridges (see fig. 20, p. 80).

The Draft Combined Land Use Plan makes no proposals for the Main Island which would greatly increase traffic volumes in the East End. New developments on Bay Farm Island will be the major source of traffic growth.

Harbor Bay Isle, its 3,200 dwelling units and industrial and commercial development, could add a demand of approximately 1,300 peak hour vehicles on the Bay Farm Island Bridge. Other developments will also put pressure on the Bay Farm Island Bridge, particularly the expansion of Oakland Airport.

The Bay Farm Island Bridge, and its controlling intersection, have .6 lanes of reserve peak hour capacity in each direction.* They could accommodate a 33% increase in peak hour traffic, only about 460 vehicles. The development of Harbor Bay Isle will soon fill the bridge to capacity. The increasing congestion at the bridge as Harbor Bay Isle develops will force traffic with destinations outside the Main Island to find alternative routes rather than to cross the Bay Farm Island Bridge.

The High Street Bridge and its intersections are now close to or at peak hour capacity. Few additional vehicles could be accommodated. The limited spare capacity of the High Street Bridge restricts the growth of traffic traveling the entire length of the East End between the Bay Farm Island and the High Street Bridges.

It is possible by not widening the High Street or the Bay Farm Island Bridges or their controlling intersections to confine the new traffic demand in the streets of the East End to less than one additional lane. Still, additional capacity will be needed on streets in the East End to handle this projected traffic growth.

Land Use Recommendations

1. Existing R-1 area should be designated as Single-Family.

2. Residential areas in the East End with zoning higher than R-1 which contain a mixture of single-family and multi-family structures should be designated as Special Single-Family.

3. The remaining area of vacant property, south of the new Lincoln School, should be designated Single-Family.

*The capacity of bridges is actually determined by the traffic flow through intersections on both sides of the bridges.

4. The residential area at the edge of the Encinal and High Street commercial zone which is presently zoned C-1 should be designated Special Single-Family.

5. The R-5 Zones along High Street should be designated Administrative-Professional.

Open Space Recommendations

1. Developments along the water that should provide public access include:

   a. Development of the vacant property, south of the new Lincoln School

   b. Further development of the Aeolian Yacht Club.

2. Maintenance and public use of the access at the end of Central and Liberty Avenues should continue.

3. Street trees should be planted along those streets in the East End where the existing trees are inadequate. This would serve to upgrade residential streets and improve their visual quality.

Circulation Recommendations

1. The residents of the City approved the extension of Fernside Boulevard on March 8, 1977. The ballot referred to Alameda Engineering Department Drawing Number 5188C, Case 51, and approved by the City Council in its Resolution Number 6733, adopted January 1965. It will be the task of the City Council to implement this measure through the Capital Improvement Program.

2. No action should be taken which would increase the capacity of the Bay Farm Island or High Street Bridges, either by widening the bridges themselves or the intersections on both sides of the bridges. This is the primary defense against greatly increased traffic, especially through traffic, on all the residential streets in the East End.

South Shore

The South Shore extends from Crown Memorial State Beach in the west to the Bay Farm Island Bridge in the east; and from the northern edge of the lagoons to the San Francisco Bay (see fig. 27, p. 113). Most of this area stands on landfill that was constructed along the southern edge of the City during the 1950's. Consequently, this area is the latest developed neighborhood in the City, and its physical character contrasts strongly with the older parts of Alameda north of the lagoon.

Land Use Issues

Residential

The South Shore has a number of contrasting land uses. While the area contains a mixture of single and multi-unit developments, they are not generally mixed within blocks or developments. The multi-unit developments are clustered along the shoreline and on the lagoon east of Willow Street, with the remainder of the area dominated by single-family and commercial uses.

The South Shore exhibits extreme contrasts and abrupt changes in density — from low density single-family areas to high density multi-family districts. The single-family areas have average net densities of about six dwelling units per net residential acre. Multi-family areas have densities of 30 or more dwelling units per net acre, although a few have densities as low as 25 (see fig. 12, p. 41). The older apartments, particularly along the shoreline, tend to be box shaped and lacking in design detail, in contrast to the more recent developments such as the Willows and the South Shore Beach and Tennis Club. These make much better use of form, materials and landscaping. However, all the shoreline's developments tend to crowd too closely to the shoreline open space. Some of the older apartments along the Shoreline Drive have only medium maintenance.

The single-family areas of the South Shore generally contain conventional tract houses with a suburban character. Generally, in these areas the streets are wider and the houses lower, giving the neighborhood a more open, and less urban character than the rest of the City. There are two townhouse developments in the area — one on Willow Street and the other, Ravenscove, on Otis Drive — which have a character and density intermediate to the traditional single and multi-family structures. There are only two larger vacant parcels in the South Shore area: one at Otis Drive and Rosewood Way (8.54 acres); the other at Otis Drive and Willow Street (0.83 acres). At one time, the Otis-Willow site was considered for a Senior Citizens Center. Both parcels are adjacent to areas of single-family housing.

Commercial

South Shore Center, a major general commercial area for the City, is located in the South Shore area. It was intended as a regional shopping center, servicing a market area to be opened up by the Southern Crossing. With the failure of the Southern Crossing, the Center was left at the periphery of its market area. Nevertheless, it has been successful in drawing trade from the older commercial areas in the City.

Although located on bayfront property, the Center does not relate to the water in any way. None of the major structures facing the Bay — the Main Post Office, the Cinema, or the Pacific Telephone building — make use of the location. In fact, most of the facades facing the Bay are windowless. There has also been little attention to sign control; the most obvious example being the extremely large sign at the Park Street entrance.

The strip development found on the bayfront side of the Center is being repeated along Otis Drive. In addition to Great Western Savings and Loan, and Wells Fargo Bank, there recently has been added Alameda First National Bank and Alameda Federal Savings and Loan. Security Pacific Bank also has plans for a new facility adjacent to the others. There is the possibility that this type of strip development might be repeated on the Park Street edge of the Center, creating a virtually continuous band of uses around the periphery which do not relate to the South Shore Center itself. Presently, access from the Center to the banks on Otis Drive and to

the uses on Shoreline Drive is across a parking lot. This lack of distinction and separation between the pedestrian and the car discourages foot traffic between the various areas.

There is one neighborhood commercial zone at Westline and Otis Drive which contains a gas station, a convalescent home, and a block of offices.

Open Space Issues

The South Shore has 32.1 acres of community and neighborhood open space, including Washington Park, Rittler Park, and the playgrounds at Wood School. Crown Memorial State Beach encompasses about 380 acres, some of which is under water. These open spaces have very different characteristics. Washington Park was established in 1908 and contains a great deal of mature vegetation and a variety of activities, while Rittler Park is a flat athletic field. The Crown Memorial Beach consists of the shoreline from the Federal Center (located on McKay Avenue) to Broadway. Along most of its length, the beach is badly eroded and at high tide very little beach is exposed. Shoreline Drive runs along the edge of the beach and the amount of traffic on this street separates the beach from adjacent residential and commercial uses. There is no place for motorists to park except on the street, and the pedestrians must either walk on the beach or across the street. The area of public beach extends east of Broadway, but it is not a part of Crown Memorial Beach. Along this section, single-family houses front directly onto the beach; and in places the distinction between public and private land is unclear. The area of land seaward of the property lines of these houses on Bayview Drive is public, and there is public access all the way from Broadway to the Bay Farm Island Bridge.

The lagoon provides a limited form of open space in the South Shore, but only for those homes with access. Except for brief glimpses at Otis Drive near Park Street, at Broadway, and at Grand Streets, the lagoon system is virtually inaccessible to the pedestrian. A small, narrow strip of vacant land between the lagoon and Otis near Park Street could be landscaped to enhance the lagoon's open form.

Circulation Issues

Many South Shore streets carry heavy traffic volumes, especially Otis Drive, Shoreline Drive, Park Street, and Westline Drive. Otis Drive carries over 10,000 cars per day over much of its length, increasing to over 14,000 average two-way trips east of Park Street. Shoreline Drive carries over 7,000 cars per day over most of its length. Traffic on most of these streets increased 40% between 1965-75 and some streets, such as Eighth Street, experienced a 100% increase (see fig. 23, p. 85). In addition, new development on Bay Farm Island will have an impact on this new area.

A bicycle staging area is to be established by the City next to the Bay Farm Island Bridge to integrate with the development of bicycle paths around the perimeter of the vacant property south of Lincoln School, and along Fernside and Bayview Drive. It will be important to integrate and tie together all facilities designed to create and serve public access along the shoreline.

Land Use Recommendations

1. Areas currently zoned as Single-Family should remain as Single-Family.

2. Existing large multi-family developments should be designated Special Multi-Family.

3. The vacant parcel at Otis Drive and Rosewood Way should be designated Single-Family. The vacant site at Otis Drive and Willow Street should also be categorized as Single-Family.

4. Existing Administrative/Professional areas should remain essentially the same. A portion of the C-1 area on Otis Drive and Westline Drive should be designated Administrative/Professional, as shown on the Proposed Land Use Map.

5. Further strip development fronting directly onto streets at South Shore Center should be discouraged. Any further development of this type should meet generous setback requirements. These uses should also be integrated with the pedestrian circulation pattern of the Center by pathways and landscaping.

Open Space Recommendations

1. The lagoon and those portions of the shoreline which are currently public, or are proposed as public open spaces, should be designated "O" Open Space.

2. The owners of the small, narrow strip of vacant land adjacent to the lagoon on Otis Drive near Park Street should be encouraged to landscape and improve its appearance and enhance and heighten the visual impact of the lagoon.

3. Landscaping and other techniques, including wind shelters, should be used to make Rittler Park more interesting and inviting.

4. Every effort should be made to work with federal, state, and regional agencies to provide methods and funds to stabilize the erosion on the South Shore beach, and to develop a more usable, visually attractive beach area. These plans should incorporate turnout points for cars along Shoreline Drive, as well as a footpath and bicycle path along the edge of the beach.

5. The public nature of publicly owned shoreline behind houses should be established. Fences or other physical or psychological impediments to public access to publicly owned land along South Shore behind the houses on Bayview Drive should be removed. When funds are available for beach improvements, monies should be allocated for the establishment of a footpath and bicycle path along the beach edge.

6. In connection with South Shore Center, the following recommendations are made:

   A. The use of the large parking area should be studied to determine if any landscaped open space can be regained from the existing paved areas, both on the street frontage and within the parking lot itself.

   B. Landscaped strips within the parking area should be provided - including lines of trees between parking stalls and main buildings that can also serve as pedestrian walkways.

C. Provide landscaping criteria for new buildings along the streets.

D. Landscaping at the main entrances and exits should be provided, and integrated with the signage.

E. Oversized signs should be phased out over an agreed upon amortization period.

F. Any new development or rebuilding in the Center should be oriented to any available water view.

7. The City should determine which trees, of suitable size, will grow well in fill, and should use these trees exclusively. Size is extremely important in this area. Small trees make no visual impression because of the extremely wide streets.

Circulation Recommendations

1. The City should study the entrance/exit access and control features of South Shore Center. Special consideration should be given to the control of traffic associated with the strip development along the perimeter.

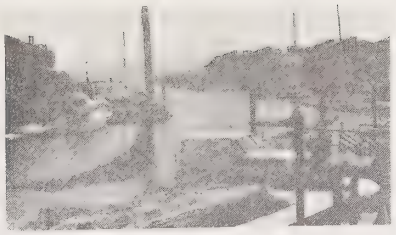
2. The bike staging area should be related to the development of public access along the shoreline and become an integral part of a unified system of shoreline access.

3. While capacity may have to be increased on Eighth Street between Portola and Lincoln, major widening should be avoided.

4. The development of Atlantic Avenue Extension should be expedited to provide an alternative route for eastbound traffic.

5. The section of Eighth Street from Lincoln Avenue to Westline Drive should be landscaped where possible to mitigate the visual and audible impacts of increased traffic.

West End



The West End extends from Webster Street on the east to Main Street in the west, and from Atlantic Avenue on the north, to Ballena Bay in the south.

Land Use Issues

This neighborhood has a mixture of different types of residential areas: some mixed residential, some single-family, and some multi-family. The older residential area near Webster Street has R-2, R-3 and R-4 zoning. The character is predominantly single-family with some mixed residential blocks where significant numbers of multi-family structures have been interspersed among older single family houses (see fig. 8, p. 29). Many block faces still have a Victorian residential character, with many high basemented Victorian cottages. The maintenance in this older area is medium.

Along the edges of this older residential area are newer developments. In the north, near the Naval Air Station, are relatively new multi-family areas. Many of these are poorly designed, large, bulky structures with little landscaping and medium maintenance. Parking is not screened, but open and visible to the street. There is quite a bit of vacant land in this area which breaks up the visual continuity. Alameda Belt Line Railroad right-of-way along the southern edge of Atlantic Avenue is an unlandscaped strip of land. The City is currently exploring alternative plans for the improvement of this property.

Two large parcels of vacant land abut the railroad right-of-way. Main Street also has a strip of overgrown, vacant land running along it. The Naval Air Station maintains a variety of low intensity uses along Main Street to act as a buffer. Unfortunately, most of these uses are industrial storage or vacant land with weeds and are unscreened from neighboring residential uses. However, the current Naval Air Station Commander is formulating plans to improve the area. Adjacent to the Naval Air Station, there is the Esperanza Housing Project, administered by the Alameda Housing Authority. This low and moderate-income development is well designed and maintained and is a successful multi-family development.

On the eastern edge of the Naval Air Station is an R-1 Zone of small, single-family houses built in the 1940's. This area is well maintained. Some small street trees have been planted but the vegetation is generally sparse, especially in contrast to the neighboring Victorian residential areas. Along Central Avenue there are apartments with densities as high as 44 dwelling units per net residential acre. The maintenance of these apartments is medium.

Ballena Bay

Ballena Bay is a new water oriented development which includes part of the shore in the West End and a peninsula extending out into San Francisco Bay. Most of the houses are townhouses, with densities averaging about 10 dwelling units per net residential area. The nonresidential portion of the peninsula, created from filled tidelands, is owned by the City of Alameda and leased to the developer of Ballena Bay. The developer has a 25 year lease on the peninsula which expires in 1989, with option to renew for an additional 25 years. This lease incorporates a land use plan which includes, among other things, a hotel, convention center, offices, shops, and recreational facilities. So far, only the offices, restaurants, tennis courts and the marina have been built. The hotel/convention center project has not been developed and may not be economically feasible in the near future.

This leads to the consideration of including residential units in the leased area. This could only occur if the leases were longer and certain restrictions against residential use, contained in the state grants, were changed. BCDC might have to review such changes as well. But Ballena Bay has the potential for a water oriented mixed-use development.

Open Space Issues

The open space in the West End, although only slightly inadequate in total acreage, is very deficient in parks. Most of the existing open space is associated with schools. Only 13%, 5.3 of the West End's 39 acres of open space is parks (see Table 2, p. 63).

The largest of the two parks, Woodstock, is well used, but it is surrounded by schools and residential development which make it virtually invisible in the area. Both Woodstock and Longfellow Parks are oriented towards recreational activities, and they do not fill the need for quiet landscaped spaces in this neighborhood. While deficient in total park acreage, there are a number of opportunities to increase the open space provision in the West End - along the shoreline and along Atlantic Avenue.

A vacant parcel of 9.22 acres is located south of Central Avenue and west of the Federal Center. The parcel has significant shoreline frontage that would be an important link between Crown Memorial Beach and Ballena Bay. Residential development on this parcel could allow shoreline open space wide enough for pedestrian and bicycle paths, as well as passive open space.

Ballena Bay is Alameda's only small boat harbor directly on San Francisco Bay. The picturesque harbor is protected by the shape of the landfill. Ballena Bay offers some spectacular views of San Francisco and the Peninsula.

BCDC has required access in Ballena Bay. In addition, two schools with shoreline frontage are on either side of the peninsula. BCDC is renegotiating the access locations with the developer, and at the same time is coordinating efforts by the school and City to develop open space, a boat ramp, and a pier on the school sites. The goal is an integrated access connection, with supporting facilities, from Encinal High to Crown Memorial Shoreline.*

The City is seeking funds from the Department of Navigation and Ocean Development for the development of a boat ramp and fishing pier in the Naval Air Station property adjacent to Encinal High School. Such a facility would increase the range of activities available to the public along the shoreline and could be tied in to other proposals to increase shoreline access and facilities on the West End.

Note: Circulation issues affecting the West End are discussed in the Webster Street Section.

*Letter, Alameda Unified School District from Charles Roberts, Executive Director, BCDC, February 28, 1977.

Land Use Recommendations

1. Areas currently zoned for single-family should remain as Single-Family.

2. Existing multi-family developments on large parcels of land should be designated Special Multi-Family.

3. Existing residential areas in the center of the West End, which presently have zoning higher than R-1 but still maintain a mixture of single-family and multi-family housing, should be designated Special Single-Family.

4. Existing C-2 areas adjacent to Webster Street which have remained predominantly residential should be designated Special Single-Family.

5. The 9.22 acre vacant parcel south of Central Avenue and west of the Federal Center (see fig. 15, p. 55), should be designated Single-Family with required Planned Development.

6. The three vacant parcels between Atlantic and Buena Vista Avenues should be designated Special Single-Family.

7. The western portion of the undeveloped parcel behind the Paden School should be designated Single-Family.

8. Ballena Bay should be designated Mixed-Use, so that residential development could occur at Ballena Bay if State legislation and lease restrictions are changed.

Open Space Recommendations

1. This plan endorses the proposal to develop a boat ramp and fishing pier on Naval Air Station property next to Encinal High School.

2. The City should continue cooperation with BCDC, the developers, and the School District to integrate and improve public access on and adjacent to Ballena Bay and create a continuous band of shoreline access from Crown Memorial State Beach to the Encinal Boat Ramp. Once negotiations are completed, and a plan is decided upon, development of the open space should begin immediately.

3. New neighborhood and community parks should be developed in the center of the West End, since most of the existing open spaces are school playgrounds, not parks. Small, informal parks and community gardens would be appropriate to fill this open space need.

4. Woodstock Park should be extended along Brush Street for one block to improve the entrance to the park and make it more visible in the community. The first stage should be to pave and landscape Brush Street to create an attractive park entrance. (Initial street improvements are the property owners' responsibility.)

   In addition, to increase the visibility and accessibility of the park in other directions, the City should work with the Alameda Unified School District to develop pathways from the park; one to the proposed bikeway along Atlantic Avenue through the Woodstock School, and another to Pacific Avenue through the Chipman School.

5. The strip of vacant land south of Atlantic Avenue, formerly occupied by the Alameda Belt Line tracks, should be developed as a bicycle path, and should provide landscaping to buffer the visually unattractive uses abutting this pathway. It should also integrate with the open space proposals made for the Webster Street gateway. The intersection of Atlantic Avenue and Webster Street might be developed as a bus plaza area, as indicated in the City's Scenic Highways Element.

6. The Naval Air Station should be buffered from the West End residential areas by landscaping, as well as low-intensity uses.

Circulation Recommendations

1. To keep Naval Air Station and College of Alameda traffic from using residential streets, techniques to protect residential areas such as diverters should be considered for use on West End streets. The type of technique to be used will depend on the specific situation. Better bus service to and from the Naval Air Station would also help to reduce traffic on residential streets in the West End.

Webster Street

Webster Street Business District is defined as the area between the Tubes and Central Avenue and one block each side of Webster Street.

Webster Street is a major gateway and the most heavily traveled entrance to the City of Alameda. Most people's first impression of Alameda is Webster Street. Webster Street has some visual assets but generally can be characterized as "undefined".

The street lacks visual continuity required to establish it as a primary pathway through the commercial district. Its terminus at Central Avenue is ineffective because of the elements in the foreground. This visual inconsistency is evident from a number of sources: different building styles; inconsistent shop front treatments within a single two-story building; wide variety and location of advertising signs; different colors of building finish within a single building, and the relation of one building to adjacent buildings along the same sidewalk; different building materials; intermittent locations of curb cuts at varying lengths along the sidewalk; discontinuous building frontages along the sidewalk; irregular traffic flow; and absence of regular significant visual interest. Merchants have worked with the City to improve street tree planting, but there is no regular overall street planting pattern.

Land Use Issues

Webster Street can be viewed as a corridor having distinct areas with varying land uses.

The Central to Lincoln C-2 area has more unity and character with the potential of being a unique and very specialized commercial area in Alameda. It contains retail stores, entertainment, and services with more of a pedestrain orientation.

The blocks between Lincoln and Atlantic Avenues are characterized mainly by automobile oriented uses (auto repair garages, used car lots, service stations), fast food outlets, and

restaurants. The existing C-M, C-2, and Industrial zoning has perpetuated an area of hodge-podge development that is marred by commercial signs, billboards, and a mixture of commercial/industrial uses.

The area between Atlantic Avenue and the Tubes is basically industrially zoned, undeveloped vacant land, much of which is used for storage. It is not well maintained and would require extensive upgrading. Other uses include a drive-in theatre with an open air flea market. The Makassar Strait Village, a public housing project, is in a poor state of repair at the northeast corner of Atlantic Avenue and Webster Street.

Open Space Issues

This entrance to and from Alameda could be an impressive gateway. The entrance is partially enhanced by the College of Alameda, which is well landscaped and provides an open space setting. The area between Webster Street, Patton Way, and Atlantic Avenue, presently owned by Alameda Housing Authority, Alameda Unified School District, and General Services Administration, has the potential to complement this, and to be used as a buffer for Patton Way. It is possible portions of the property may be needed for Patton Way. Open space corridors also could connect this gateway to the Estuary and Pan America properties.

Circulation Issues

The following chart depicts the existing and projected traffic for Webster Street:

Existing and Projected Traffic for Webster Street

	Existing	Projected	
	1977 traffic counts	1995 with Patton Way	1995 without Patton Way
Central to Lincoln	21,700	24,500	31,500
Lincoln to Buena Vista	26,100	31,500	41,200
Buena Vista to Atlantic	26,700	34,600	51,300
Tubes	43,800	51,900	59,100

Source: CalTrans and City of Alameda

Patton Way

The City has been planning for thirty years to develop an alternate roadway to Webster Street that would carry traffic between the Tubes and streets east of Webster Street. In 1953, the City entered into an agreement with the Southern Pacific Railroad for the purchase of the right-of-way. When it became clear that the Southern Crossing was no longer a possibility, the City applied for federal funding. Alameda County and the Metropolitan Transportation Commission approved the project and Patton Way has been ranked first among proposed county projects for Federal Aid Urban (FAU) funds.* FAU funds will pay for 83 percent of the construction costs of the project, with the remainder coming from local gas tax funds.

*Federal Aid Urban (FAU) funds are received from the Federal Government and distributed through the states to the counties. Submitted projects are selected by priorities based upon a point system.

As development occurs in the Estuary area, modification can be made to the proposed Patton Way, including new intersections, and at grade connections which could provide better services to these areas as needed.

Future possible connections to Patton Way are Atlantic Avenue Extension, giving access to the Estuary, and Mariner Square Loop(see fig. 34, p. 162) Additional discussion is provided in the Estuary Section of these two roads.

Parking location and shortages are often an issue in "downtown" type shopping areas. Webster Street is no exception. Parking is not always located with convenient access to stores. There is a shortage of off-street parking between Lincoln and Taylor Avenues on the west side of Webster Street where the highest concentration of shopping takes place. Parking relationships may also be affected by new street construction.

Land Use Recommendations

1. Reduce the area of the C-2 Zone to include as general commercial land that is presently in commercial usage as shown on the Proposed Land Use Map.

2. Residential areas which are presently zoned C-2 should be designated Special Single-Family as shown on the Proposed Land Use Map.

3. Eliminate the C-M zoning and revise the land use designation to allow for residential, commercial, industrial, and open space uses as shown on the Proposed Land Use Map in the area presently zoned C-M.

4. A Webster Street Revitalization Study should be accomplished by a joint effort of the business community and the City. This study should develop a systematic program to regenerate Webster Street, and address rehabilitation, urban design, signing, landscaping, parking, economic, social and physical problems, and develop an implementation plan for the area.

Open Space Recommendations

1. A landscaped corridor should be provided connecting Webster Street and the Pan America Industries property.

2. Landscaping and open space criteria should be developed for new commercial development along Webster Street, including street trees, street furniture, etc.

3. The vacant land presently used as storage by Alameda Unified School District, the federal land, and portions of the Makassar Strait development should be obtained to jointly function as a buffer and open space park area.

Circulation Recommendations

1. As a first stage, the Patton Way extension between the Tubes and Lincoln Avenue at Eighth Street should be built (see fig. 34, p. 162).

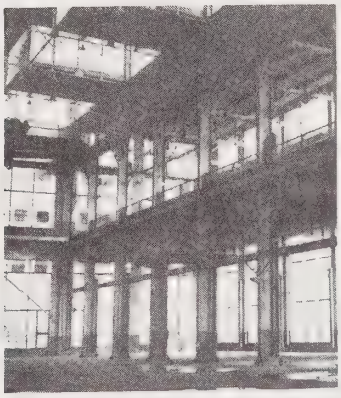
2. Patton Way street design and construction should provide for a landscaped buffer adjacent to residential uses.

3. Patton Way should be designed so that it can provide easy access to encourage use of Atlantic Avenue Extension by both trucks and autos.

4. A plan should be developed (perhaps in conjunction with a Webster Street Revitalization Program) to provide more parking with direct and convenient access to business establishments from the rear as well as the front of buildings. It could also cover modernization of buildings, parking lots, and landscaping. The implementation requires joint participation by private business interests in Webster Street and the City. Details of the program such as parking lot development, beautification and modernization, land acquisition, and financial requirements should be based on a precise plan of action. This would include consideration of additional off-street parking spaces in the block between Lincoln and Taylor Avenues on the west side of Webster Street.

5. As the area grows, new business should be required to follow new parking standards.

6. A parking relationship between Patton Way and Webster Street should also be developed.



Estuary
Land Use Issues

Overview

The basic structure of the Estuary area can be described as five marina enclaves surrounded by either vacant or heavy industrial land uses. These activities are bounded by the high traffic volume along Webster and Park Streets and Buena Vista Avenue.

The accompanying map, "Visual Character"(see fig. 30, p. 142),indicates the impression a person would likely have walking through the area. Such a map is a useful device to quickly identify key problems and opportunities.

In terms of intensity, the vacant industrial property between Webster Street and the Encinal Terminals contrasts sharply with the "working" waterfront between the Alameda Yacht Harbor and Park Street. Within the latter zone, a variety of metal buildings, storage tanks, heavy equipment, railroad lines, and other associated uses spill over into residential pockets along Clement Avenue. An unrelated assortment of commercial, industrial, and residential properties is especially apparent in the area bounded by Clement and Buena Vista between Willow and Park Streets.

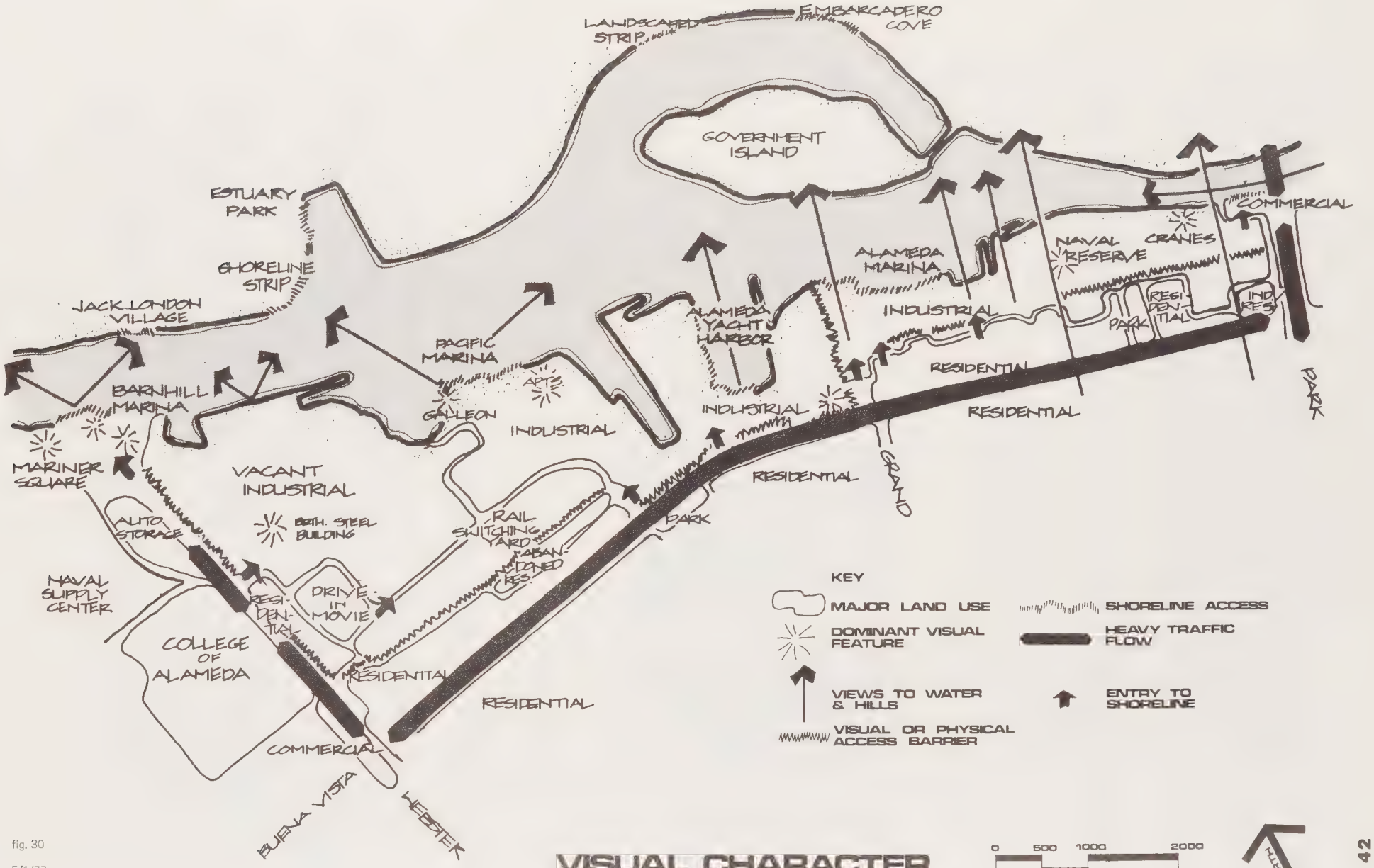


fig. 30

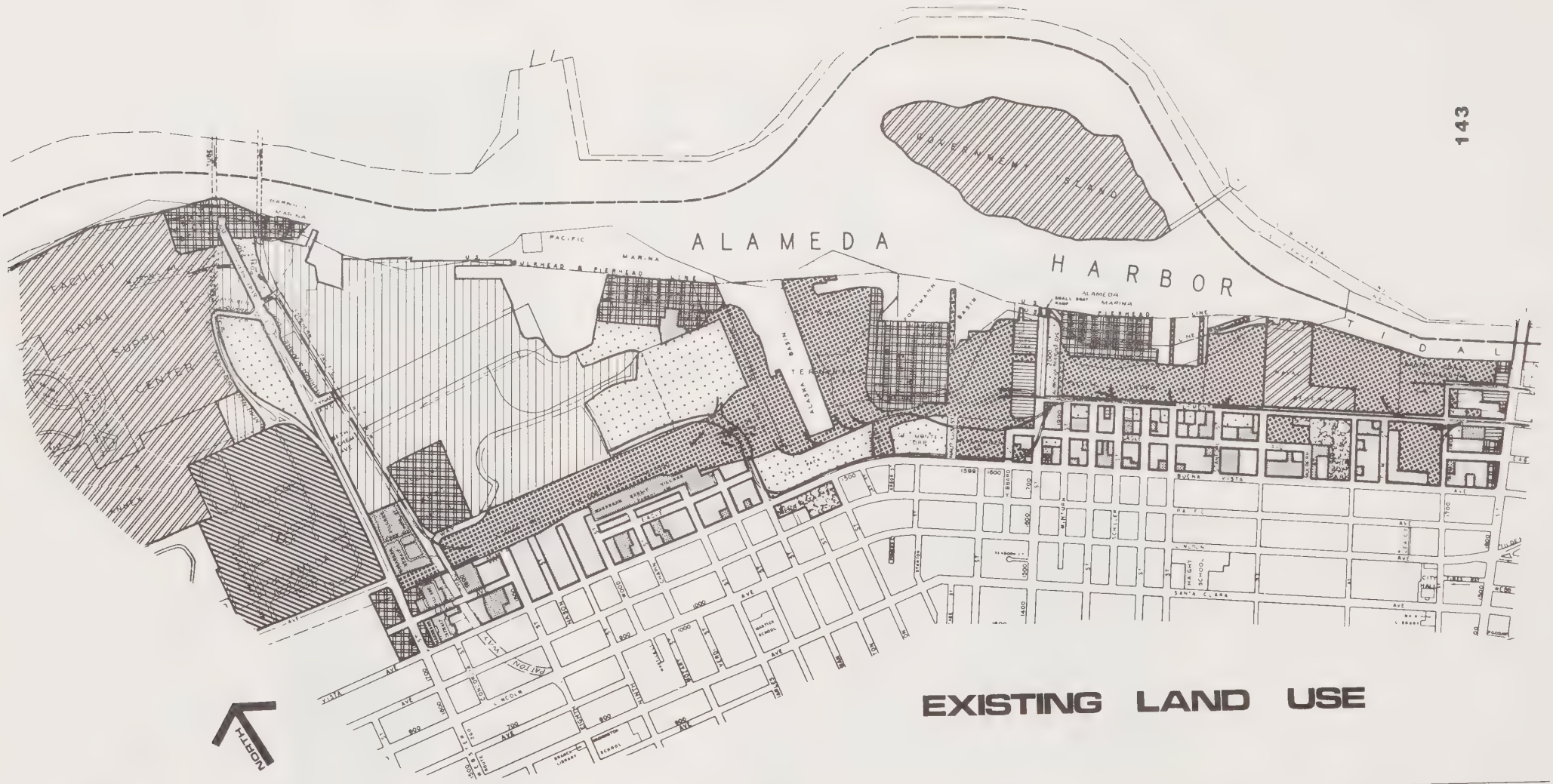
5/1/77

VISUAL CHARACTER

0 500 1000 2000

SCALE IN FEET

NORTH



EXISTING LAND USE

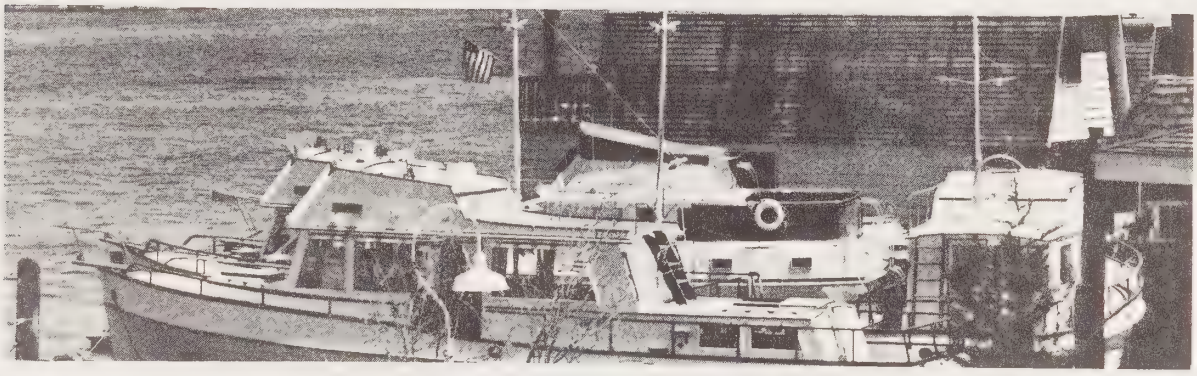
KEY

- SINGLE FAMILY
- MULTI-FAMILY
- NEIGHBORHOOD COMMERCIAL
- GENERAL COMMERCIAL
- COMMERCIAL MANUFACTURING
- LIGHT INDUSTRIAL
- HEAVY INDUSTRIAL
- MILITARY
- VACANT LAND
- INSTITUTIONAL, PUBLIC & SEMI-PUBLIC
- PARKS

0 500 1000 2000
SCALE IN FEET

fig. 31
5/1/77

The waterfront cannot usually be seen from inland positions because visual or actual access is blocked by industrial structures. With the exception of the City's boat launching and fishing pier facilities at the foot of Grand Street, access to the water is limited to existing marinas and subject to private controls. There exist some "slot" views of the Oakland hills from streets leading to the Alameda marinas. In addition, there are excellent panoramic views of downtown Oakland and marinas along the opposite shore from the Pan America Industries shoreline.



Most developed open space along the water is related to boat berth access at the Yacht Harbor and the Pacific and Alameda Marinas. However, the small landscaped areas between the restaurants at Mariner Square and adjacent to the Galleon restaurant afford some outdoor uses like picnicking on the grass and watching boating activity.

Certain structures visually dominate the skyline. Some of these structures are of interest, while others are eyesores. Several examples of the former are the Rusty Pelican and Ancient Mariner restaurants in Mariner Square, or the cranes near the Park Street entrance. The latter are represented by the silos near the Barnhill Marina, and the drive-in movie screen greeting those emerging from the Webster Street Tube. Of special note is the existing brick and glass Bethlehem Steel building near the drive-in movie. This unique significant landmark was built in 1917. The interior skylighted space is reminiscent of European shopping arcades.

Industrial

Land along the Estuary has traditionally been given over to industry on both the Alameda and Port of Oakland sides. Alameda has about 525 acres of industrial land, of which the City owns and leases approximately 60 acres. Firms like Alaska Packers, Pacific Ships, Santa Fe-Pomeroy, and Harbor Tug and Barge hold tidelands leases ranging in expiration from late 1977 to the 1990's. Aside from these and other firms, like Weyerhauser, Pennzoil, Fruehauf, the Volkswagon unloading terminal, Del Monte and smaller industrial plants, the area contains large sections of unused or vacant land, some with existing structures of little or no value. As indicated in Table I and on the Estuary Land Use Map (see fig. 31, p. 143). about 78% is designated as industrial. Within this category, however, are over 109 acres of vacant land, mainly within the Pan America Industrial property.

Statistical Summary of Land Use

Land Use Category	Acreage	Percent of Same City Wide Category
Heavy Industry	242.76	81%
Light Industrial	48.76	21%
Nonresidential Vacant Land	109.67	10%
Residential	80.77	4%
Commercial/Manufacturing	10.10	28%
General Commercial	7.03	6%
Recreation and Parks	6.57	Less than .01%
Institutional	4.02	Less than .01%
Neighborhood Commercial	2.57	7%
Total (excluding streets)	512.44	

Table 8

Commercial

Behind the Tube portals, the Mariner Square complex has developed into a high quality commercial and recreation area. However, the commercial/manufacturing section of Webster Street, starting at Atlantic Avenue, has been described in the Webster Street section as "lacking visual continuity." This lack of cohesiveness, coupled with the large volume of truck traffic along the northern end of Webster Street that turns on Buena Vista through residential areas, are matters of concern.

Like Webster Street, the Park Street entrance to the City progresses from industrial uses at the bridge to commercial uses to the south, as described in the Park Street Section.

Residential

Except for the Makassar Strait Village on Webster Street, all of the residential properties within the Estuary lie between Buena Vista Avenue and the Alameda Belt Line Railroad yard or between Buena Vista and Clement Avenues. Of the 627 dwelling units within these two areas, about 72 percent are single-family homes. The population here is estimated at approximately 1600 residents. Characteristics of this residential area are described in the Northside Section.

The industrial areas along the Estuary have a negative impact on the adjacent residential properties. There are no landscaped buffers between the two areas so that industrial activities dominate the small houses and have a blighting effect. Even more serious are the trucks that use Buena Vista Avenue to serve the industrial areas. As is the case with the Alameda Belt Line switching yard, noise generated along Buena Vista Avenue was identified in the Noise Element.

Zoning Patterns and Conflicts

Nearly the entire Estuary area is zoned either M-1 (Intermediate Industrial) or M-2 (General Industrial) as is indicated in the general zoning map. The demand, however, for industrial and manufacturing areas is quite limited. Consequently, there is a general feeling that the Estuary is industrially overzoned and that new uses, such as a mix of residential, commercial, office, recreational, and open space, would be appropriate for vacant areas.

With regard to residential zoning, the Estuary between Sherman Street and Webster Street is zoned R-2 (Two-Family District) while east of Sherman Street is zoned R-3 (Residential Apartment District) and R-4 (Neighborhood Apartment District). Immediately south of and adjacent to the Pacific Marina is an area designated as R-6 (Hotel/Apartment District). As pointed out earlier, the industrial uses on the north are the major source of incompatibility due to noise, traffic generation, appearance, and associated low maintenance. Besides industrial, there are a number of commercially zoned properties scattered throughout these residential zones. With rezoning and the elimination of incompatible uses, these residential neighborhoods could be stabilized.

Vacant Land and Rehabilitation

With the large block of vacant land in the west Estuary, and the potential for rehabilitation and re-use of existing buildings and land in other sections of the Estuary, consideration should be given to some of the newer approaches to land use.

Such is the case with mixed-use which was discussed earlier in this plan. One opportunity mixed-use has for transitional areas such as the west Estuary is its potential for creating a new physical environment that will overshadow some of the less desirable (industrial) adjacent land uses, as well as be a catalyst for improvement of those adjacent land uses. After analyzing 80 mixed-use developments across the country and surveying the developers of those projects, the Urban Land Institute concluded that, in an uncertain economy, mixed-use developments "will probably fare better than many other forms of real estate, provided they are carefully conceived . . . and managed . . . Product differentiation - the hallmark of many mixed-

use developments to date - may thus become the dominant factor in distinguishing this as a financially viable form of real estate over the decades ahead."*

Such a development form is particularly appropriate in the Estuary area because the interactions between its uses have the potential to reduce reliance on the automobile, in contrast to the traffic generated between similar but segregated activities. The Circulation Section for the Estuary looks at some sample mixes within the area's traffic capacity with residential, industrial, office, and shopping uses. But a mix could be calculated that might include recreational and public facility uses. Open space is also an integral part of any mixed-use project.

Open Space Issues

A number of commercial and recreational developments have been built in recent years on both sides of the Estuary. They are typically clusters of boat berths, restaurants, condominiums, and tourist oriented shops. They are usually leased to and operated by private interests, and they contain varying amounts of open space and water access for public use. Well known Oakland developments of this type are Jack London Village, the Portobello complex, and the Embarcadero.

Most marinas along the Alameda side have also provided some public access and water-oriented outdoor spaces. Although some of these access areas were created in cooperation with the Bay Conservation and Development Commission's permit procedures, most have limitations on access according to the time of day or favor members of the facility.

Existing Open Space

At Mariner Square, a landscaped strip runs for about 170 feet along the Estuary, in addition to a floating walkway around the Rusty Pelican restaurant. Although these spaces and paths appear to be part of the commercial development, they are for public use and afford water-oriented viewing.

In the Alameda Yacht Harbor, an unlandscaped strip is provided along the Fortmann Basin and Estuary. The strip offers a chance to fish and watch boat berthing activities.

Another privately developed open space is the landscaped strip between the Galleon restaurant and the Travel Lodge in front of the Pacific Marina. There is enough space here for picnicking and small group gatherings, but it is not officially public access.

On the whole, most of these landscaped, private, open spaces lack clear identity as public facilities and, for the average visitor, may be difficult to find. Furthermore, they make up only a small proportion of the total shoreline.

Mariner Square, Alameda Yacht Harbor, and the Barnhill, Pacific and Alameda Marinas contain a total boat berthing capacity of between 1150 and 1200 vessels, including houseboats. There appears to be a small number of empty slips. In 1973, the California Department of Navigation and Ocean Development estimated that by 1980 the demand for berths would exceed supply by more than 3,000; the demand for launching lanes would exceed supply by over

*"Mixed Use Developments: New Ways of Land Use," Technical Bulletin 71, the Urban Land Institute, Washington, D.C. 1976.

300.* However, the estimates were based on existing data and no new surveys were conducted. So it may be wise to determine regional demand more precisely before considering more in the Alameda Estuary area.

Open spaces developed by public agencies in the Estuary zone are McKinley and Buena Vista Parks, Thompson Field, and the City's boat launching ramps and piers. Only the last facility affords unrestricted public use of the shoreline. In total, these spaces amount to about seven acres. In addition to the above, the College of Alameda offers, at least visually, a distinct landscaped open space element in the west end of the study area. The nearby drive-in movie property, which operates as a weekend flea market, serves an important open space function. In the future, perhaps, this activity could utilize some of the space in the renovated Bethlehem Steel building.

Open Space Needs and Opportunities

The limited amount of vacant land in other developed sections of the City, in contrast to the large amount of Estuary vacant land, underscores the opportunity for providing open space here. The 9.7 acres of vacant land along Webster Street between the drive-in movie and the tube portals, together with portions of the 109 acres of industrially vacant land, can potentially serve a number of open space and recreational purposes. Some of the functions that recreational open space can meet are additional boat berthing, fishing, jogging, kite flying, and picnicking. In addition, open space can provide such amenities as green belts, lagoons, and buffers between conflicting land uses. Opportunities to meet these needs exist in the following kinds of Estuary locations:

1. The continuous shoreline strip between the Barnhill Marina and the Encinal Yacht Club. Open space here would take advantage of views to the water, the opposite shore, hills, and downtown Oakland;

2. The area immediately south of and adjacent to the Barnhill Marina corresponding in coverage to the aircraft Accident Potential Zone II, and adjacent areas overlying deep Bay Mud;

3. Both sides of Webster Street corresponding with areas now subject to temporary storm flooding conditions (amount of area could vary depending on changes that could occur in drainage conditions with the construction of Patton Way);

**Boating Resources Development Planning Study,* prepared by Arthur Young and Co. for California Department of Navigation and Ocean Development, October 1973, p. 5.

4. The area between Webster Street, Patton Way, and Atlantic Avenue owned by the Housing Authority, School District, and General Services Administration;

5. Buffer parkway strips and bicycle lanes along the proposed Atlantic Avenue Extension;

6. A small mini-park facility in the crowded commercial/manufacturing area next to the Park Street Bridge;

7. A landscaped buffer zone between the railroad switching yard and the adjacent residential properties;

8. Linkages such as pedestrian paths, bicycle lanes, and street tree plantings between existing marinas and proposed open space facilities.

Environmental Constraints

A number of environmental features will influence the type and intensity of potential land uses in the Estuary zone. Such factors as geology, soils, aircraft approach zones, noise, storm flooding, and Estuary water depths place certain limitations on the possibilities for development, which in turn require specific design and engineering responses. The accompanying map, "Environmental Constraints" (fig 32, p. 150), is a composite diagram showing the extent of overlay of these major factors. Each factor is discussed in the order presented in the map key.

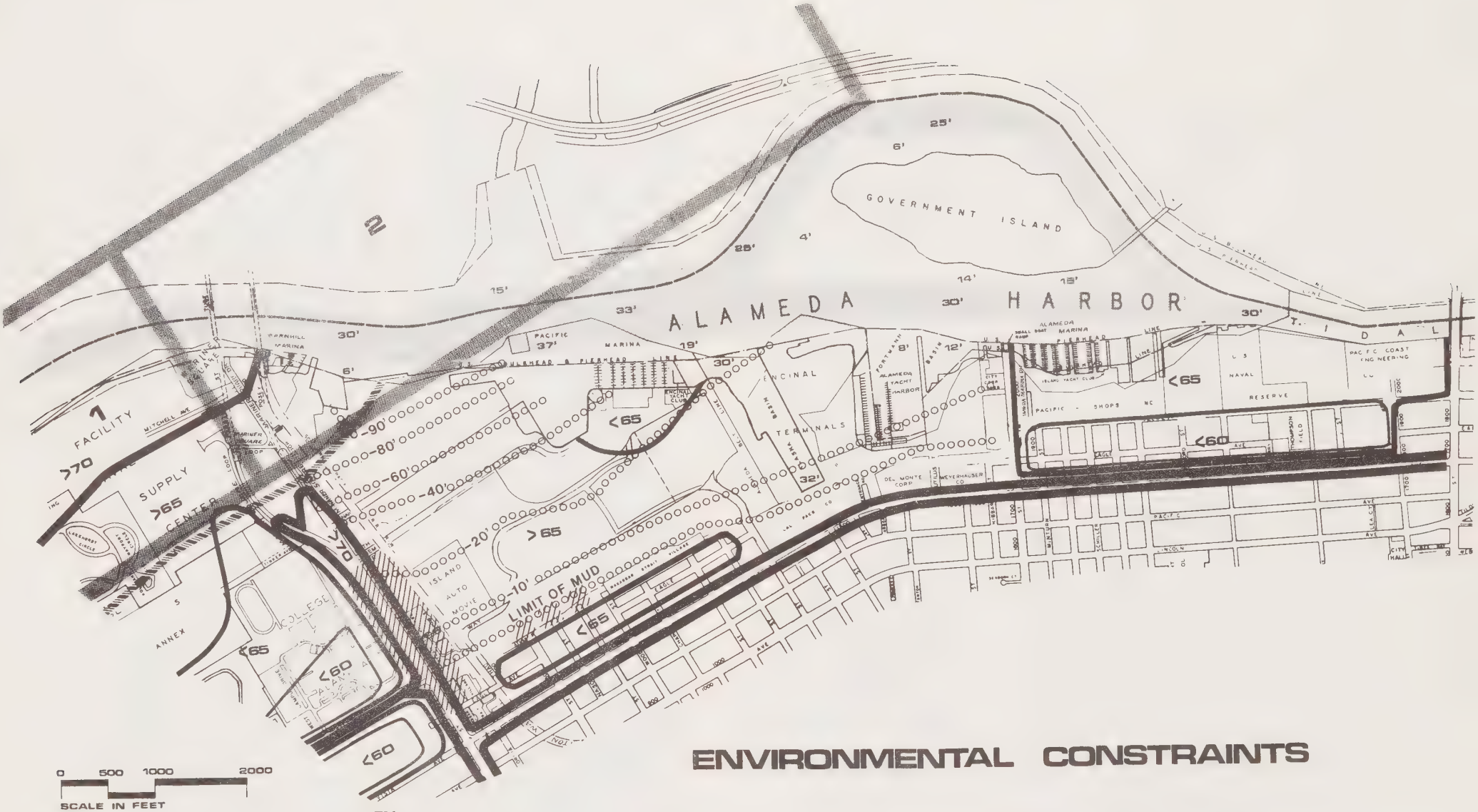
Geology and Soils

Nearly all of the study area is covered with one to several feet of man-made fill over soft Bay Mud. These mud deposits begin just north of Thau Way and the Alameda Belt Line tracks and thicken towards the Estuary. As indicated on the map, the mud extends to a depth of 90 feet in the vicinity of the old launching ways just south of the Barnhill Marina. South of the Bethlehem Steel building, the soft mud is less than about 35 feet thick. In general, thick Bay Mud is situated mainly in the northwest portion of the Pan America property, while most other areas are underlain by thinner muds ranging from 10 to 30 feet in thickness. Materials below the muds are commonly mixtures of clays and sands which could support structures on piles that extend through the mud or on spread-type footings where thin or no mud exists.

The main conclusion to be drawn from geology and soils data* is the degree of compressibility and the resultant ground settlement that will vary according to the thickness of Bay Mud. If portions of the Pan America site are not raised more than 2 to 3 feet by new fill, future settlement over 50 years could be between 1 to 2 feet where the mud is up to 90 feet thick. Pile foundations or preloading techniques may be required for residential buildings where mud is thicker than 35 feet, if damaging settlement is to be avoided. Very long and costly piles of over 120 feet would be required to support large commercial structures located near the water where the base of mud is deeper than 70 feet. Structures located along newly dredged channels would have to be set back 25 to 50 feet from the top of such channels to insure slope stability.**

*Woodward-Clyde Consultants, Compilation of Geotechnical Data 320 Acre-Alameda Marina Village Site, May 2, 1977.

**Ibid.



ENVIRONMENTAL CONSTRAINTS

KEY

- DEPTH OF BAY MUD (INDICATED IN FEET)
- BOUNDARY OF AIRCRAFT ACCIDENT POTENTIAL ZONES

CNEL CONTOURS

- 60
- 65
- 70 & ABOVE
- BOUNDARY OF AREA WHERE AIRCRAFT GENERATED NOISE EXCEEDS 65dB

- AREAS SUBJECT TO STORM FLOODING
- INNER HARBOR CHANNEL (WATER DEPTH INDICATED IN FEET AT MEAN LOWER LOW WATER)

fig. 32

5/1/77

As stated in the City's Seismic Safety Element, the levels of ground shaking from expected earthquakes will be most severe in areas underlain by Bay Mud. In addition, the risk of liquefaction is present over much of the Estuary area. Liquefaction could seriously damage dredged channel slopes, on-grade supported residential structures, and possibly even break piles supporting large structures.

Soil engineering reports prepared for sites within the Estuary area should specifically address the problems of settlement and liquefaction, and evaluate them using the ground-shaking parameters presented in the Seismic Safety Element.

Aircraft Accident Potential Zones

The aircraft approach zone for Runway 25 at the Naval Air Station has a direct bearing on land use planning for a small portion of the Estuary area. Accident potential zones (APZ I, APZ II) have been established, as shown on the map, based on the most likely locations of an airplane crash.

APZ I has a length of 5,000 feet and is 3,000 feet wide, while APZ II is the same width and covers an area 7,000 feet long, beyond APZ I. The area within the Estuary affected by APZ II includes the Mariner Square development, the Barnhill Marina, and a small section of the Pan America property located immediately east of the Posey Tube. As stated in the City's Safety Element, these areas are subject to such policies as 1) 50% of the City's land area within APZ II should be maintained as open space; 2) no additional residential uses or development should be permitted; 3) any single building is held to a 200 person occupancy limit; and 4) building heights are held to three stories.

The colony of houseboats at Barnhill Marina have been exempted from APZ policies because they are an existing use and the relocation costs are excessive. However, an expansion or increase in density at the Marina should not be allowed. In brief, the main intent of the Safety Element policies regarding development within APZ zones in the Estuary is to allow present development to continue, but at reduced levels of intensity.

Noise Hazards

The two major sources of noise related problems in the Estuary are associated with aircraft fly-overs near the Naval Supply Center and surface traffic movement along Webster Street, Buena Vista Avenue, and Park Street. Noise along Buena Vista Avenue causes the most concern because of CNEL levels in excess of 70 dB along its entire corridor. Aggravating this problem is the high percentage of trucks that use this route, which can further reduce the livability of the adjacent residential streets. Besides these two major noise sources, there are intermittant noise incidents associated with the Alameda Belt Line Railroad yard and industrial activities along Clement Avenue. The City's Noise Element identifies areas over 70 dB within the City as normally unacceptable for such noise sensitive land uses as residential, playgrounds, hospitals, schools, libraries, and auditoriums. Residential uses are only conditionally acceptable between 65 and 70 dB. The Noise Element recommends criteria for open space buffering, building setbacks, and insulation to reduce decibel levels to acceptable standards.

Flood Hazards

There are several locations in the Estuary area where infrequent flooding due to storm waters occur. Webster Street, between Eagle and Tynan Avenues, is served by a storm-drain system,

including pumps in the Encinal Terminal area. When the volume of storm runoff is high, about six times a year, the pumps of the storm sewer have insufficient capacity to carry away water as fast as it accumulates at Webster Street, between Atlantic and Bethlehem Avenues, and at the north ends of Eighth, Nason, and Ninth Streets. Residents near the last three streets seldom experience significant economic loss or hardships. However, when flooding occurs on Webster Street at Bethlehem Avenue about once a year during morning commute hour, there is significant economic impact. Production losses occur because hundreds of automobile commuters are held up or must enter Alameda by way of one of the bridges. About five other floodings take place here annually at different times of the day or night. The effects are minor; some cars are stalled and brakes are wetted. Some of these drainage problems could be corrected with the construction of Patton Way and Atlantic Avenue Extension.

Estuary Water Depth

The depth of the water along the Estuary is more of an asset than a constraint. As can be seen on the map, a channel at least 30 feet deep is maintained along the entire length of the Estuary area. This permits the passage of deeper draft tankers (26') and freighters.* Water depth outside of the channel normally ranges from six to twelve feet. This depth is adequate for most recreational boating purposes. A 20 foot sailboat, for example, needs about six feet of water. It can be assumed, therefore, that water depth is not a limiting factor for most recreational boating activities. One restriction on boating in the Estuary is that boat speeds should be reduced to minimize damage from boat wakes.

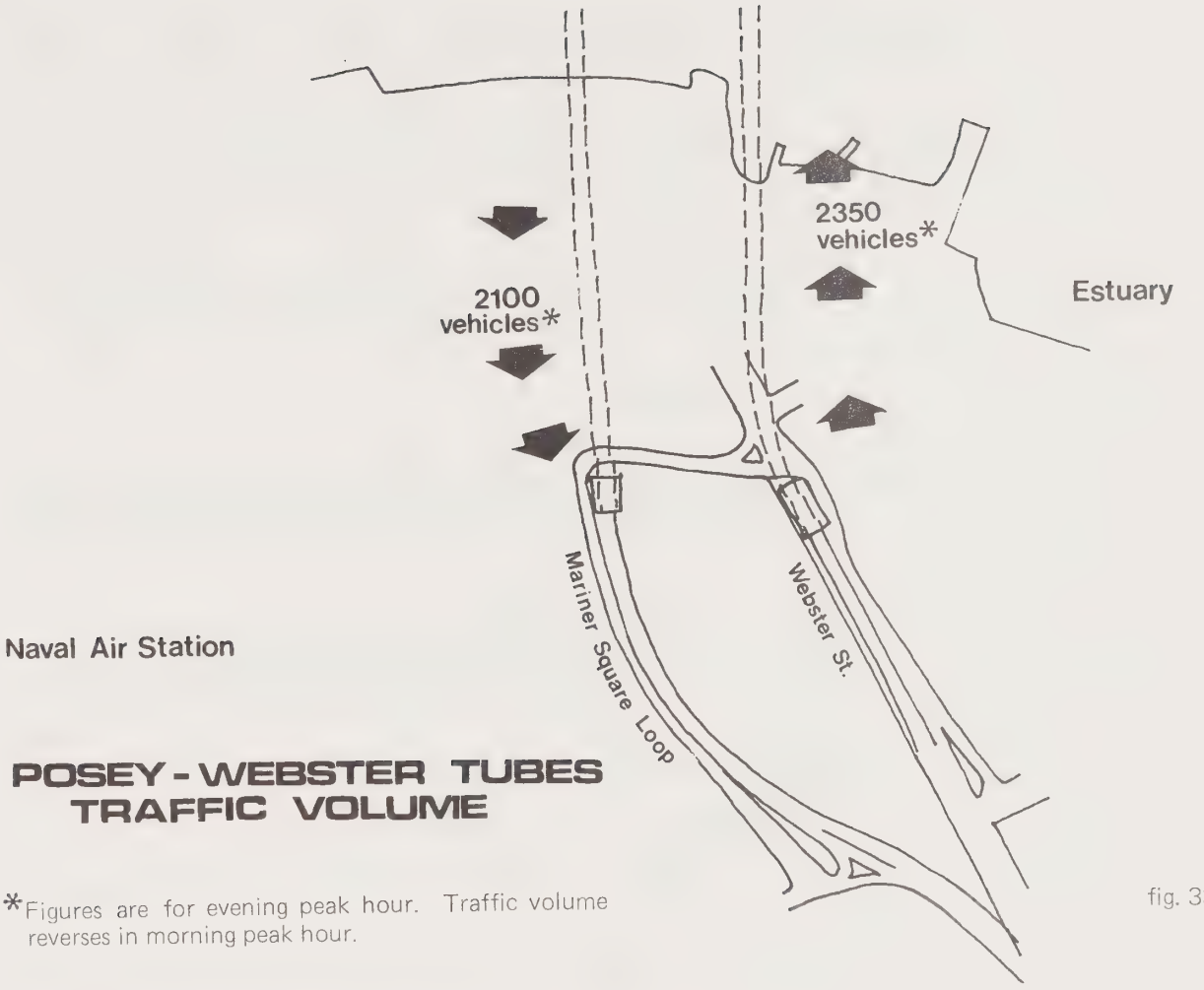
The Army Corps of Engineers exercises federal jurisdiction over the waterway, and they have the responsibility for maintaining the shipping channel. Permits must be obtained from the Corps of Engineers for any construction involving bridges, tunnels, piers, dredging, or fill to insure that such work will not interfere with navigation.

Other Constraints on Development

Besides the environmental features discussed above, there are a number of economic and governmental constraints that will affect potential Estuary development. Such factors as the number of property owners, duration of term leases, Measure A, the regional market capacity for future commercial/recreational/residential uses, and government regulations (BCDC, WQCB, CEQA) will have a direct bearing on the type and intensity of future land uses. Another consideration of importance is the cost a developer would have to bear involving the demolition and removal of existing abandoned buildings, piers, ship launching ways, and bulkheads. For example, a 1971 private consultant report for the Del Monte Company estimated the cost of removing the brick Bethlehem Steel building at $419,000, plus approximately another $500,000 for the clearance of the nearby ship launching ways. Such costs lend emphasis to the importance of finding new uses for these existing structures.

The most serious obstacle facing Estuary development is the lack of adequate roadway access to much of the western waterfront properties. Primary circulation is limited by the existing reserve capacity of the Webster Street and Posey Tubes. The Patton Way and Atlantic Avenue Extension will provide better access to Estuary properties and will funnel increased volumes of visitor and industrial traffic away from Buena Vista Avenue. A more comprehensive discussion of circulation issues follows.

*The Port of Oakland, by comparison, can accommodate a ship with a 40 foot draft according to the Marine Terminals Office



*Figures are for evening peak hour. Traffic volume reverses in morning peak hour.

fig. 33

Circulation Issues

Holding Capacity

Holding capacity of vacant land in the west end of the Estuary is governed almost entirely by the amount of additional traffic that the tubes can accommodate. Peak hour traffic is particularly crucial; outbound a.m. and p.m. and inbound a.m. and p.m. The least amount of reserve capacity available occurs with the outbound p.m. traffic. That means that presently the heaviest traffic levels occur when vehicles are going to Oakland in the late afternoon/early evening hours.

The allowable development of the Estuary area, as controlled by peak hour traffic capacity of the tubes, is estimated as follows:*

1. Tube Capacity

   a. Theoretical lane capacity is 2000 vehicles per lane per hour. Assuming traffic can enter or leave at this rate, over 70% of each hour as controlled by signals at intersections at

*Much of the following material on Estuary Circulation is based on information obtained from D.K. Goodrich, Consulting Traffic Engineer.

either end,* the lane capacity is 1400 per hour and the one-way tube capacity is 2800 vehicles per hour.

b. Counted volumes have reached 2350 inbound in the a.m. peak hour and the same outbound in the p.m. peak hour. Counted volumes have reached 2100 outbound in the a.m. peak hour and same inbound in the p.m. peak hour.

c. The reserve capacity then is: 450 vehicles per hour inbound in the a.m. peak and 450 outbound in p.m. peak; 700 vehicles per hour outbound in the a.m. peak and 700 inbound in the p.m. peak hour.

2. Capacity Available for Estuary Development

Approximately 600 dwelling units and 10 acres of light industry are projected to be developed on the Main Island, exclusive of the Estuary, on the basis of available vacant land. These are estimated to consume 100 vehicles per hour capacity of the outbound a.m. and inbound p.m. reserve.

3. Assuming that 2/3 of the peak hour trips that will be generated by the Estuary will use the Tubes (based on existing patterns), the allowable development of the Estuary is:

Allowable Peak Hour Generated Trips

Outbound		Inbound	
a.m.	p.m.	a.m.	p.m.
900	675	675	900

Table 9

To determine how much traffic a given level of development generates during peak hours, a rate of peak hour trips generated per unit (per dwelling unit or per 1,000 sq. ft.) is determined:

Peak Hour Trip End Generation Rate

	Outbound					
	a.m.			p.m.		
	per d.u.	per 1000 sq. ft.	per acre	per d.u.	per 1000 sq. ft.	per acre
Residential	.40		7.00	.25		4.00
Office		.40	1.12		1.80	5.04
Shopping		.10	.38		1.35	5.00
Light Industrial		.05	.50		.50	5.00

*The Oakland end, assuming Patton Way is built.

Inbound

	a.m.			p.m.		
	per d.u.	per 1000 sq. ft.	per acre	per d.u.	per 1000 sq. ft.	per acre
Residential	.20		3.50	.60		10.5
Office		1.80	5.04		.40	1.12
Shopping		.10	.38		1.35	5.00
Light Industrial		.40	4.00		.10	1.00

Table 10

ADT Estimates

	per d.u.	per 1000 sq. ft.	per acre	
Residential	10		175	(outbound a.m. + inbound p.m. x 10 = ADT)
Office		36	100.8	(inbound a.m. + outbound p.m. x 10 = ADT)
Shopping		27	100	(outbound p.m. + inbound a.m. x 10 = ADT)
Light Industrial		9	60	(inbound a.m. + outbound p.m. x 10 = ADT)

Table 10a Based on Table 10 and use of a 10/1 ratio of ADT to peak hour.

Note: Table 10 and 10a assume levels of development limited by Tube capacity (as expressed in Table 11).

The maximum levels of development that could occur if only one land use is allowed are determined by dividing the traffic capacity for the critical periods (outbound p.m. and inbound a.m. -675) by the heaviest traffic generator for that time period (office 1.80). If the level of development proposed is known to be 500,000 sq. ft. of shopping, its peak hour traffic generation is determined by multiplying 1.35 by 500 (1.35 per 1,000 sq. ft.).

Examples of Single Land Use Maximums - Total Trip Ends Generated Per Hour

		Outbound		Inbound	
		a.m.	p.m.	a.m.	p.m.
Residential	1500 d.u.	600	375	300	900*
or Light Industrial	1,350,000 sq. ft.	68	675*	540	135
or Office	375,000 sq. ft.	150	675*	675	150
or Shopping	500,000 sq. ft.	50	675*	50	675

*Hour and direction that controls, based on allowable trips from Table 26.

Table 11

However, mixed-use development could occur on vacant West Estuary property and still be within traffic capacity. The amount of development that could occur within each land use classification is calculated by a series of three matrices, using four land uses as shown in Table 29. These calculations result in a listing of many examples of land use combinations. Still they represent only a few of the thousands of possible combinations that can occur within traffic capacity. A few of the examples from the list in the Appendix are cited here:

Number of Possible Units with Three Sample Land Use Mixes

Residential	400 d.u.	500 d.u.	600 d.u.
Light Industrial	180,000 sq. ft.	260,000 sq. ft.	180,000 sq. ft.
Office	110,000 sq. ft.	150,000 sq. ft.	90,000 sq. ft.
Shop	210,000 sq. ft.	110,000 sq. ft.	200,000 sq. ft.

Table 12

Whatever mix-combination is selected by the developers for a proposal will depend to a great degree on the developer's research into what levels of each particular use can economically be absorbed by the market, as well as consideration of environmental restraints such as noise and soils capability.

There are several factors that could change these numerical conclusions. These traffic generation figures assume that patterns of transit usage will remain the same. So if public transit usage could be increased, higher levels of development could be accommodated. This could take the form of higher levels of AC Transit service, or developer-provided mini-bus service to BART and other points on the Oakland side of the Estuary. Increased development on the Estuary may prompt AC Transit to provide additional service but this may not be considered until the district gets more buses, and an increase in patronage on existing lines occurs.

Other forms of public transit should also be considered; the Estuary provides the possibility of ferry service. Ferry service to Oakland and/or San Francisco could be conducted by a public agency or by a cooperative of Estuary property owners, but would have to be coordinated among several public agencies. Improvement of public transit service and introduction of alternative commute hour transit modes, such as intensive car-pooling, for principal peak hour traffic generators in the West End could reduce traffic through the Tubes. This would include the Naval Air Station and College of Alameda.

Another factor that could lower traffic generation from Estuary uses to the Tubes is interaction among the uses. A mixed-use development provides the potential for a person to live, work, shop, and recreate in one area where transit modes between uses can be for pedestrians or bicycles. But how much of this will actually occur will not be known until the development is built and occupied. This interaction can be fostered by the form a development takes. If it is compact, there is more potential for interaction than if the same number of units or square feet are spread out over a larger area. If a large development is built in phased units, the first units can be monitored to determine if traffic levels match the projections. This information can be used to determine precise development levels in later units.

Atlantic Avenue

There is no direct connecting east-west street of any consequence in the Estuary area. This deficiency has long been recognized due to the undesirably heavy traffic load, as well as the use of Buena Vista Avenue as a truck route which bisects a principally residential neighborhood. The development of an east-west route was proposed in the 1975 Goals Study and in the 1969 Comprehensive General Plan-1990, and has been discussed and proposed for at least 20 years. The corridor available for such an extension would be an extension of Atlantic Avenue that would run east from Webster Street, along Thau Way, between the Belt Line Railroad and the Pan America property. When it reaches Sherman Street, it could take two possible paths. Both paths would be adjacent to existing rail lines to some extent. One route would turn south on Sherman Street, then east again on Buena Vista Avenue, north on Grand Street and east on Clement Avenue which it would continue to follow. This alignment might cause some modifications of intersection design where turns occur. Traffic levels on Sherman and Grand Streets will increase, and traffic might continue on Buena Vista rather than make the turn on Grand Street to Clement Avenue. This alternative makes maximum use of existing industrial roads.

The second route would involve more new street construction, but would eliminate the turns, and reduce somewhat the tendency for traffic to turn onto residential streets. Instead of turning south on Sherman Street, Atlantic Avenue would bear southeast, then continue in an easterly direction behind the Del Monte California Packing Company and Weyerhauser buildings for a more direct link to Clement Avenue at Grand Street. It is these existing industries between Sherman and Grand Streets which constitute the main obstacle to this extension. It may not be possible to accomplish this until the owners in this area elect to reuse and rehabilitate their holdings; and/or when the uses are no longer linked with adjoining property. In the interim, Buena Vista Avenue could continue as the east-west link, with Lincoln Avenue, farther south, continuing to handle peak hour spill-over traffic.

Mariner Square

Present access to Mariner Square is by the Mariner Square Loop to Mariner Square Drive. The restaurant-recreational complex of Mariner Square, the views it provides, and the shoreline access there provides a character that can be carried through in future improvements to the area. Improved access to Mariner Square Drive could be in the form of a widened landscaped corridor that would support the views and provide pathway links to the Webster Street area and the Pan America property, as well as provide additional parking.

Recommendations

Both the Mayor's Advisory Estuary Study Committee and task forces comprising the Community Goals Study analyzed the Estuary's opportunities and considered options available to the City concerning planning and development. Members of the groups felt that future planning should allow for a flexible mix of activities composed of commercial and residential uses, light industry, additional boating facilities, and water-oriented recreational area.

The major intent of this plan, because of circulation constraints, is to balance existing and proposed commercial and recreational uses which generate the most activity in summer, weekends and evenings, with residential and industrial uses that generate activity during other periods. In this way, the area's diversity and periods of use are expanded, while peak periods of traffic congestion are stabilized.

Land Use Recommendations

Residential

1. Any new substantial residential development in the Estuary would most likely occur in portions of the proposed "Mixed-Use" zones. The larger vacant properties within the western half of the Estuary planning area can accommodate site plan flexibility and allow more group open space within residential developments. As pointed out in the earlier General Objectives and Recommendations for residential areas, densities would correspond to the residential density range of 0 to 17.5 dwelling units per gross acre. Density may, however, be lower depending on the size of the units and the way the builder meets other standards such as open space, parking, landscaping, and building orientation.

2. The City should encourage the development of a variety of unit types for households of all sizes.

3. The City should encourage the preservation and expansion of the supply of low and moderate-income housing within the shoreline area.

4. All existing residential zones should be designated Special Single-Family.

5. Within the proposed mixed-use zones, residential layouts, roof designs, and building orientation should take maximum advantage of the waterfront as a design element, and provide maximum wind shelter and common connecting open spaces within interior areas of any development. This should be accomplished through a Planned Development approach.

Commercial

1. The City should encourage some additional service retail uses in combination with light industrial and mixed-use areas.

2. The City should encourage additional water-oriented commercial/recreational activities on the waterfront within industrial areas.

3. Additional hotel space should be permitted in locations where it would enhance the mixture of uses.

Industrial

1. Heavy industrial activity should be stabilized and reduced in extent to the Encinal Terminal area on both sides of the Alaska Basin, and to that area north of Clement Avenue between the U. S. Naval Reserve grounds and the commercial zone adjacent to the Park Street Bridge, as shown on the Proposed Land Use Map.

2. The proposed Atlantic Avenue Extension should be considered as the line separating heavy industrial uses to the north and predominantly residential uses on the south. Those uses currently zoned Heavy Industrial south of Clement Avenue and the proposed alignment of Atlantic Avenue should be rezoned and encouraged to phase into light industrial uses or be designated Special Single-Family.

Mixed-Use

1. A mixed-use development should include at least three of the following uses, or others determined appropriate by the Planning Board, plus open space: office, retail and shopping, residential and recreational.

2. Development of mixed-uses should be staged in incremental units, consistent with the proposed phases of Patton Way, Atlantic Avenue construction and existing transportation. Initial stages should relate to existing commercial and recreational activities along the Estuary.

3. Older buildings, such as the Bethlehem Steel building and the five-story concrete warehouse, should be retained and incorporated into a design concept involving mixed-use or commercial/recreational activities. The Bethlehem Steel building could potentially be converted into a combination of shopping arcades, flea market, cultural and/or trade center. They should be evaluated by the Historial Advisory Commission to establish historical significance.

Open Space Recommendations

1. Vacant portions of the Pan America industrial property should be developed with significant shoreline public access and open space; Mariner Square, the boat basin near the ship launching ways, and the Bethlehem Steel building should be linked together by a major public shoreline park system comprising the north western portion of the planning area.

2. Additional public and private boating facilities should be developed along the Estuary as part of new development; the boat basin adjacent to the old ship launching ways should be considered for a new public transient boat-berthing and/or facility.

3. The area at the terminus of Mariner Square Drive should be developed as a combined landscaped public space and vista point.

4. Mariner Square Drive should be developed and widened, if necessary, as a landscaped parkway.

5. Mariner Square should be encouraged to continue recreational and commercial development along the Estuary at the north end of Mariner Square Drive.

6. The Naval Air Station should be encouraged to provide a landscaped buffer between the Mariner Square Loop and the Naval Air Station Supply open storage area.

7. Webster Street, from the tubes to Atlantic Avenue, should be developed as a major gateway entrance to the City; landscaped buffers should be provided on both sides of Webster Street.

8. That portion of the Makassar Strait Village north of Atlantic Avenue should be designated Open Space and should be developed as a landscaped park.

9. A landscaped buffer strip should be provided between the railroad switching yard and the adjacent residential properties to the south.

10. A small mini-park should be provided along the Estuary between the Park Street Bridge and the Red Sails Restaurant.

11. The City should require that the developers dedicate open space for public uses where it can reasonably be required and where it will be usable. This donation of open space should be in accordance with agreed upon staging strategy between the City and the developer. This can be accomplished through the Planned Development process or by the existing Residential Dwelling Unit Tax Ordinance, (Chapter 13, Article 1, Sec. 3-1314, Land Dedication in Lieu of Payment of Money, Alameda Municipal Code).

12. Shoreline open space should be designed to clearly distinguish between public and private areas.

13. Circulation routes, signs, utility lines, and landscaping should not interfere with views or access to the water from developments and routes oriented to take advantage of these views or access.

14. The City should carefully regulate new general advertising signs in the Estuary area. Public and private signs should be required to contribute to improved orientation for the visitor and to the aesthetic appearance of the waterfront; and a consistent signage theme should be adhered to.

15. Plant materials, consisting of trees, shrubs and ground covers used for landscaping purposes, should be selected to remain viable under such conditions as (a) prevailing winds, (b) high salt water tables, and (c) sub-surface earth fill material consisting of a mixture of construction rubble, rocks, sand, and gravel with varying drainage capacities.

16. A variety of edge conditions should be provided along the water in park and open space areas.

17. The City should encourage the promotion of a maritime or waterfront theme through the use of pier planking and pilings for building materials where feasible for such elements as plant containers, steps and walks, street lights, sign poles, railings, seating and tables, transit stops, and telephone booths.

Circulation Recommendations

1. Traffic generated by Estuary development should be monitored on a periodic basis to verify that actual vehicular generation is consistent with projected traffic generation.

2. A transportation alternatives study for the Estuary should be conducted to determine methods of reducing traffic at peak hours through the Tubes. This should be conducted in joint cooperation with the City, the Naval Air Station, the College of Alameda, AC Transit, and Estuary business and property interests.

3. Shuttle service to major employment centers, shopping areas, and other transit corridors should be considered as a condition of Estuary development.

4. Preliminary design studies and identification of possible funding sources should begin for the Atlantic Avenue alignment.

5. Atlantic Avenue should be extended across from Webster Street and then extended along the south end of the Pan America property as shown on the Proposed Land Use Map. The Patton Way extension should be modified to accentuate the east-west movement and to encourage the use of this new "Atlantic Avenue" by both trucks and autos. The alternative alignments between Sherman and Grand Streets should be phased with Estuary development, with Buena Vista Avenue used as a connection until reuse and rehabilitation occur in that area.

6. Atlantic Avenue Extension should be developed as a parkway, with landscaped buffers incorporating pedestrian and bicycle paths constructed at the same time the roadway itself is built. The adopted Bicycle Route Master Plan should be amended accordingly.

7. After precise Atlantic Avenue alignment, right-of-way, and improvements have been determined, they should be required as a condition of approval of contiguous new development and coordinated with redevelopment.

8. A parkway type access should be provided from the Mariner Square Loop to the Mariner Square property.

9. Secondary circulation routes within the Estuary area should be designed to divert as much automobile traffic as possible away from areas of intense pedestrian open space activity in order to make conditions more pleasurable, safe, and interesting for those on foot.

10. Public transit should be expanded along the Estuary and serve existing and proposed marinas and commercial/recreational development between Webster and Park Streets.

11. Circulation routes should not be situated to interfere with views to the water's edge.

12. The City, with cooperation from the Port of Oakland, should study the feasibility of a passenger ferry system between commercial/recreational development on both sides of the Estuary, as well as to and from San Francisco.
    A. Transit connections should be developed promptly if ferry service is established to encourage a pattern of traveling to and from the ferry by bus.
    B. Secure bicycle storage areas should be provided to encourage cycling to and from the ferry.

PROPOSED ROADS

(additions, alterations & extensions)

fig. 34

0 1000 2000 4000

SCALE IN FEET

Bay Farm Island

Introduction

Bay Farm Island, which at one time actually was an island of less than 800 acres in San Francisco Bay, is now the tip of a peninsula created by levees and extended by hydraulic fill of the marshes, tidelands, and open water which surrounded the original island (see fig. 17, p. 69). The Alameda portion of the peninsula is the northwest tip of about 1700 acres separated from the main island of Alameda by the San Leandro Channel. Metropolitan Oakland International Airport borders to the south and east.

The largest and last fill project for Bay Farm Island was accomplished according to the terms of a 1964 "Fill Agreement" and subsequent modifications between the City and Shoreline Properties, Inc., and its successors in interest.

Utah Construction and Mining Company had been acquiring rights to the tidelands from private owners since 1950. In 1964, Reclamation District No. 2105 was formed to be responsible for the dredging and construction of levees and protective devices around the perimeter of the designated filled area. This agency formed under the laws of the State also supervised the responsibility of property owners to pay their share of the reclamation costs. The fill created about 900 acres of land which still remains vacant.

Land Use Issues

Overview of Existing Land Uses

It is useful to break down the total land area on Bay Farm Island into discrete sub-areas: land owned by the City or State, land owned by Oakland International Airport, land currently used for residential purposes, land currently used for commercial purposes, land currently used for agriculture, and land owned by Harbor Bay Isle Associates.

Public Lands

The State of California owns the right-of-way for Doolittle Drive which includes part of the old Maitland Drive and the fishing pier adjacent to the Bay Farm Island Bridge. The State also owns the north 700 feet of Island Drive.

The City of Alameda owns the other public right-of-ways and most of the land around the perimeter of Bay Farm Island beyond the boundary of the Reclamation District, almost all of which is under water. Around the tip of the peninsula, however, some of this City owned land is not under water. This land is not a continuous perimeter, and is often of negligible width. In its

widest section, it is about 15 feet above the mean higher high tide level, that is, the average water level of the tide at its highest daily point.

Other usable City parcels include the golf course, which comprises about 350 acres, and the 42 acre City dump. The City owns and maintains the 5 acre Godfrey Park on Beach Road and also owns an undeveloped 2 acre park site at Holly and Oleander Streets which had been dedicated to the City by the developers of nearby townhouses. The City owns a 7.65 acre vacant parcel on Maitland Drive near the corner of Island Drive as part of the golf course and a 5.8 acre parcel on Maitland Drive across from the golf course that is leased to the Island City Gun Club. Small miscellaneous City parcels include the fire drill tower and the sewage pump station on Island Drive. The City has entered into a land exchange agreement which will provide a 6.1 acre city park in the Harbor Bay Isle development on Mecartney Road adjacent to a proposed shopping center-community center complex.

Property Owned by or Leased to the Port of Oakland

The Port of Oakland owns within the City of Alameda a nearly triangular parcel of land, approximately 270 acres, contiguous to the boundary of the City of Oakland and abutting the southeast portion of the lands of Harbor Bay Isle Associates. The Port of Oakland also owns a 312 acre parcel of land which is mostly submerged or marsh land along the southern perimeter of Bay Farm Island, but which does include a filled portion for the end of Runway 29. The Port currently leases another 320 acres of submerged land in San Francisco Bay along the southwest perimeter of the peninsula as a flight path for the use of Runway 29. The City of Alameda and the Port of Oakland have agreed to move toward the de-annexation from Alameda and annexation to the City of Oakland of parcels owned by the Port and a portion of the tidelands which up to now have been leased by the Port.

Existing Residential

The existing residential area on Bay Farm Island is called the Highlands because it was part of the original island and protected from the tides of the Bay by elevation. The oldest portion, immediately south of the golf courses, developed on a lot by lot basis, starting about 1923, without provision for full City services, and the sewage system was made available in 1948. Most lots on the streets near Maitland Drive were developed for single family detached housing, though there is one apartment building and a few lots still vacant.

South of this area, small subdivisions of single-family houses were constructed in the 1950's and 1960's. To the west, three large townhouse complexes (Islandia, Casitas and Garden Isle) were constructed by one developer between 1963 and 1976.

Existing Commercial

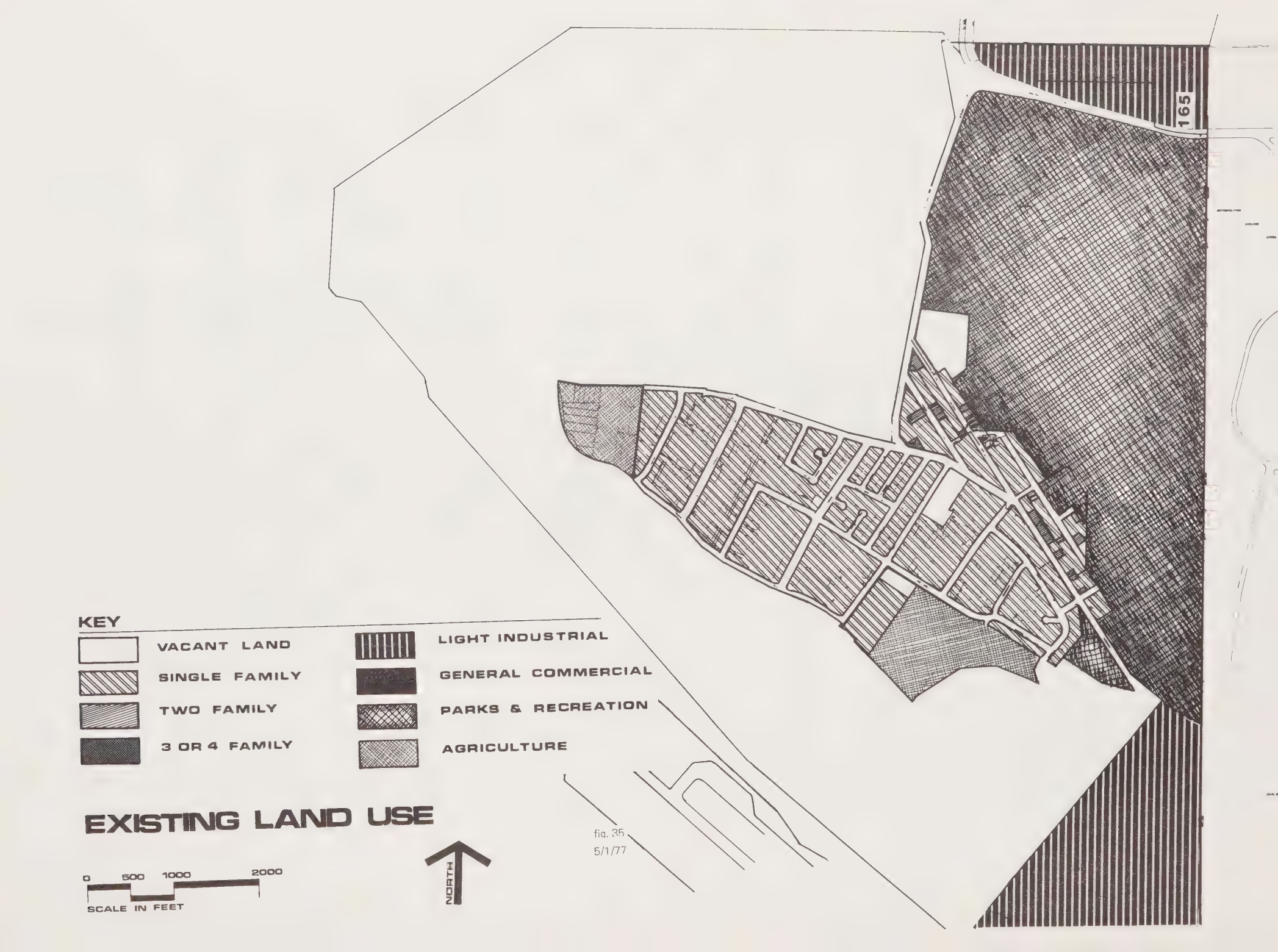
There is a C-1, Neighborhood Commercial District, at Maitland Drive and Flower Lane which currently possesses two commercial buildings, a convenience market and food carry-out service, located next to each other along Maitland Drive (see fig. 35, p. 165).

Agricultural

At either end of the Highlands are farmlands that are actively cultivated at present (see fig. 35, p. 165). The land is highly fertile, and truck farming has been a viable land use.

Harbor Bay Isle Associates' Property

The approximately 915 acre filled area within the Reclamation District is owned by the development firm of Harbor Bay Isle Associates, a joint venture of Doric Development, Inc. of Alameda, and Bay Farm Island, Inc., a wholly-owned subsidiary of Utah International, Inc., the successor to Utah Construction and Mining Company that had placed the fill. The land is


KEY
VACANT LAND
SINGLE FAMILY
TWO FAMILY
3 OR 4 FAMILY
LIGHT INDUSTRIAL
GENERAL COMMERCIAL
PARKS & RECREATION
AGRICULTURE
165
EXISTING LAND USE
0 500 1000 2000
SCALE IN FEET
NORTH
fig. 35
5/1/77


R-1
R-1
C - 2 - PD
M-2
R-1
C-2-PD
R-1-PD
0
C-2-PD
0
R-2
C-1
R-1
R-2
R-1-PD
R-1-A-PD
R-1-PD
0
R-1-H-50
R-2-H-40
R-1-A-PD
R-1-H-30
R-1-A-H-40
R-1-A-H-30
R-1
C-M-PD
R-1-A-H-20
C-M-PD
R-1
EXISTING ZONING
0 500 1000 2000
SCALE IN FEET
NORTH

fig. 36
5/1/77

basically vacant and is still capable of being shaped according to intended use, since the grading drainage and placement of lagoons are still in process.

Low and Moderate Income Housing Opportunities

The open land of Bay Farm Island presents at least the physical opportunity to achieve the Housing Element goals of providing additional affordable housing for lower and moderate income people dispersed throughout Alameda. Bay Farm Island currently possesses no publicly supported housing beyond a few Section 23 rentals. Some of the housing in the older portions of the Highlands was originally provided for moderate income families, but the high purchase prices for Single-Family detached housing in the current market have placed most of these homes out of the reach of moderate income families. New housing constructed in the last ten years has generally been for medium income families. Imaginative financing mechanisms would be necessary to actualize the opportunities afforded by the vacant land.

General Restraints on Future Developments

Development of the large vacant areas owned by Harbor Bay Isle, smaller vacant parcels, and the properties used for agriculture is possibly affected by potential constraining factors in addition to economic marketability.

Sewerage

Sewage service for new developments on Bay Farm Island must be provided by the East Bay Municipal Utility District. Currently, wastewater is pumped from the City's Bay Farm Island Pump Station to the EBMUD's Krusi Pumping Plant on the main island. A new pumping station is to be constructed to serve the HBI development which will discharge into the existing connection from Bay Farm Island to the Krusi Pumping Plant. Concerns have been raised about the capacity of the system to absorb discharges from the HBI development. The City has been engaged in engineering studies of the current flows and operations of the Bay Farm Island Pumping Station and in review of the proposed HBI pumping station to insure that a proper system be provided and that EBMUD's Krusi Pumping Plant can handle the increase in sewage from HBI or other developments on Bay Farm Island. If these engineering studies do not result in a satisfactory solution to the concerns about assuring adequate capacity for absorption of sewage by EBMUD, further discussions and negotiations with EBMUD will be required, possibly affecting the timing of development on Bay Farm Island.

Water

Drought conditions in California have created a crisis condtion in which some new hook-ups might be delayed until the water supply normalizes. While residential hook-ups should not be delayed, EBMUD has established a policy that new landscaping projects will not receive water until the drought crisis is past.

Land Fill

Those portions of Bay Farm Island that are land fill require attention to the stability of the retaining dike, vulnerability to flooding, adequate drainage, and sufficiency of soil settlement forecasts.

Impact of Metropolitan Oakland International Airport

Metropolitan Oakland International Airport is located to the south and east of the Alameda portion of Bay Farm Island (see fig. 35, p. 165) The projections of growth for Oakland Airport are complicated and varied. The current allocations by the Association of Bay Area Governments (ABAG) is 7 to 8 MAP by 1985. The Port of Oakland's Airport Master Plan 1976-1986 projects 6 MAP for 1986. The Federal Aviation Administration forecasts 5.5 MAP for 1987. Forecasts

for periods longer than ten years have not been generally accepted as valid airport planning tools because the underlying assumptions are necessarily highly speculative.

The operations and projections for Oakland Airport are important for land use planning for Bay Farm Island because of actual and potential safety and noise impacts. Both of these are addressed in detail in the City's Noise Element and Seismic Safety/Safety Element.

Safety Hazards

The Safety Element addresses the most likely locations of an airplane crash based on an analysis of all civil aircraft accidents in California from 1964 to 1973. The Element determined two safety zones adjacent to the Oakland Airport boundary. These zones are approximately a mile long and 1500 feet wide in total. Zone A, closest to the airport, is 1400 feet long and Zone B, 3900 feet (see fig. 37, p. 171).

The Safety Element analyzed hazards to ground population within these zones in the event of an airplane crash and reached the conclusion that no nonoccupant deaths are likely to occur in areas with a population density of 25 people/acre from the crash of an airplane weighing less than 12,500 pounds. Therefore, land use constraints were adopted for each zone, based on existing operating condtions of the airport. These are as follows:

Zone A.

1. No structure or object should be erected or permitted to grow above the primary surface of the runway, with the exception of structures to aid navigation.

2. Land should be graded and turfed.

Zone B.

1. Land use should be nonresidential and restricted to the following uses:

   (a) agriculture
   (b) recreation/parks
   (c) equipment storage/corporation yards
   (d) single story automobile parking
   (e) single story, limited-occupancy warehousing
   (f) single story, limited-occupancy municipal activities.

2. For any land use average annual population density should be no greater than 10 persons per acre.

As noted in the Element, part of the existing residential development on Bay Farm Island is incompatible with these policies. This includes a good portion of the Highlands, on either side of Maitland Drive, a major part of the Villa del Don and Islandia developments, and all of the area included in the Garden Isle development. These areas have an estimated residential density of approximately 26 persons per acre.*

The Port of Oakland has reduced both the noise and safety hazards to the Bay Farm Island population by imposing a ban, in March 1976, on the use of Runway 27 by jets, reciprocating

*This estimate is based on the density allowed under R-1 zoning - 8.7 units per net acre - times the 1970 census figure of average household size on Bay Farm Island - 3.1. The figure of 26 persons/acre can be considered a generous estimate.

4-engine aircraft and turbo prop aircraft weighing over 12,500 pounds, except in emergencies. Given the limited number of aircraft weighing over 12,500 pounds using Runway 27, and the limited risk of the actual occurrence of an airplane crash, the Safety Element recommends against relocating the existing residents. However, future development would be required to conform to these land use policies. The remaining vacant land affected by this policy is quite limited, including primarily a portion of one of the two truck farms remaining on Bay Farm Island.

The Safety Element also contained an alternative series of policies for Zones A & B in the event that all aircraft weighing over 12,500 were prohibited from using Runway 27. These policies are not quite as restrictive for Zone B. They would allow single-family dwellings at R-1 densities in the remaining vacant land in Zone B.

The Airport Land Use Commission's 1976 Draft Airport Land Use Policy Plan proposes safety zones with the same dimensions and policies as the City's Safety Element. One minor difference is that, if all jet aircraft and aircraft weighing over 12,500 pounds were prohibited from Runway 27, the length of the ALUC safety zone would decrease from 5300 to 3500 feet. With regard to height, the Plan recommends that local jurisdictions incorporate the FAA height restrictions into their local zoning codes. This would eliminate the need for ALUC review of proposals for height considerations.

Noise Impacts

Airport Noise

The State of California has adopted noise standards for areas in the vicinity of airports because of observed annoyance, sleep loss, and interference with communication, education, work, and relaxation of persons exposed to certain degrees of aircraft noise. The technical method of measurement suggested by the state guidelines is the CNEL (Community Noise Evaluation Level), for which noise exposure contours can be plotted on a map. The CNEL contours for Oakland Airport included in the City's Noise Element were developed by Wyle Laboratories.

These contours are based on measurements that exclude noise generated by overflights from San Francisco Airport. They also assumed that the Oakland Airport's ban on the use by heavy and jet aircraft of Runway 27 is continued.

Figure 4 shows the CNEL contours on Bay Farm Island. Most of Bay Farm Island, including all of the existing residential area, have CNEL measurements within the 60-75 dB range. A small area closest to Runway 29 has a CNEL in excess of 75 dB, and most land uses are clearly unacceptable there (see Table 13, p. 170).

Between this area and the 70 CNEL line at Catalina Avenue, the CNEL is in excess of 70 dB (see fig. 37, p. 171). Industrial, manufacturing, office and agriculture uses are conditionally acceptable in this area, meaning that a detailed analysis of all construction and noise insulation features are required for all developments. Most of the land on Bay Farm Island where the CNEL exceeds 70 dB is included within the Harbor Bay Isle property.

The 65 CNEL line in the Noise Element roughly bisects the existing residential area on Bay Farm Island. In the settlement agreement signed by the City of Alameda and the Port of Oakland, this 65 CNEL line was slightly altered in order to follow property lines, and thus made easier to enforce (see fig. 37, p. 171). In the area where the CNEL ranges from 65-70 dB, a number of uses are normally acceptable, industrial and manufacturing for example, and no special noise insulation is required. Where the CNEL is between 65 and 70 dB, and the major

source of noise is an airport as on Bay Farm Island, the Noise Element stated that residential uses are normally unacceptable and should be discouraged. Existing residential uses can remain, since the Noise Element does not recommend that existing uses that are incompatible with its policies be brought into conformance.

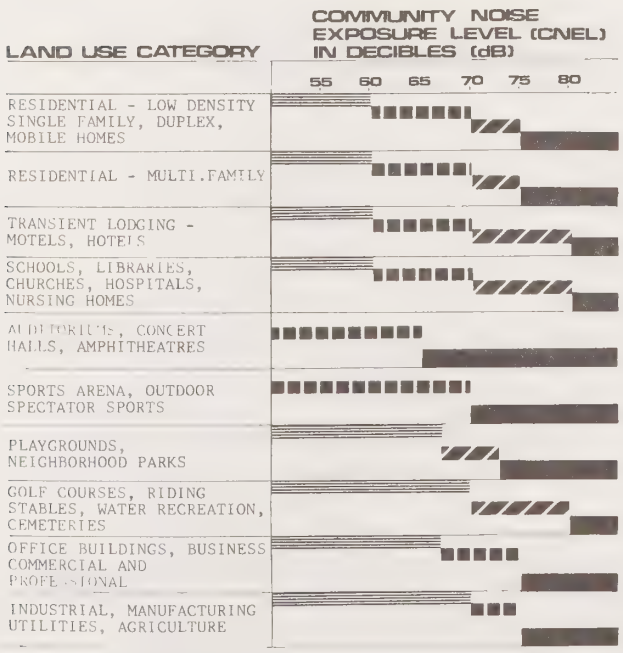
Where the CNEL is less than 65 dB but in excess of 60 dB, residential and other noise sensitive land uses, such as churches and schools, are conditionally acceptable. The rest of the existing residential area and a significant portion of Harbor Bay Isle property are included in this area.

The Noise Element also addresses future airport noise levels on Bay Farm Island. Neither the future fleet mix at Oakland Airport nor its rate of growth can be projected with certainty. However, both federal and state regulations are directed at reducing the ultimate levels of noise generation by airports. The Element concludes that future aircraft noise levels will probably be reduced by about 5 dB by 1995. Thus, the CNEL contour lines, most importantly the 65 CNEL, may be adjusted in the future if noise levels are decreased.

Surface Noise

According to the Noise Element, surface noise generated by autos, trucks and buses exceeds 60 CNEL near the major roads on Bay Farm Island (see fig. 37, p. 171). The CNEL on the Bay Farm Island Bridge and at the intersection of Doolittle and Island Drives exceeds 70 dB. The CNEL at the dump and in the right-of-way of Island and Doolittle Drives exceeds 65 dB. Along the sides of these two roads, the CNEL is in excess of 60 dB. Because this is surface, not airport related, noise, residential and other noise sensitive uses are conditionally acceptable in areas where the CNEL does not exceed 70 dB. A proposed industrial area may attract traffic generating surface noise in excess of 70 dB CNEL, which would restrain the development of affected residential areas.

LAND USE COMPATABILITY FOR COMMUNITY NOISE ENVIRONMENT



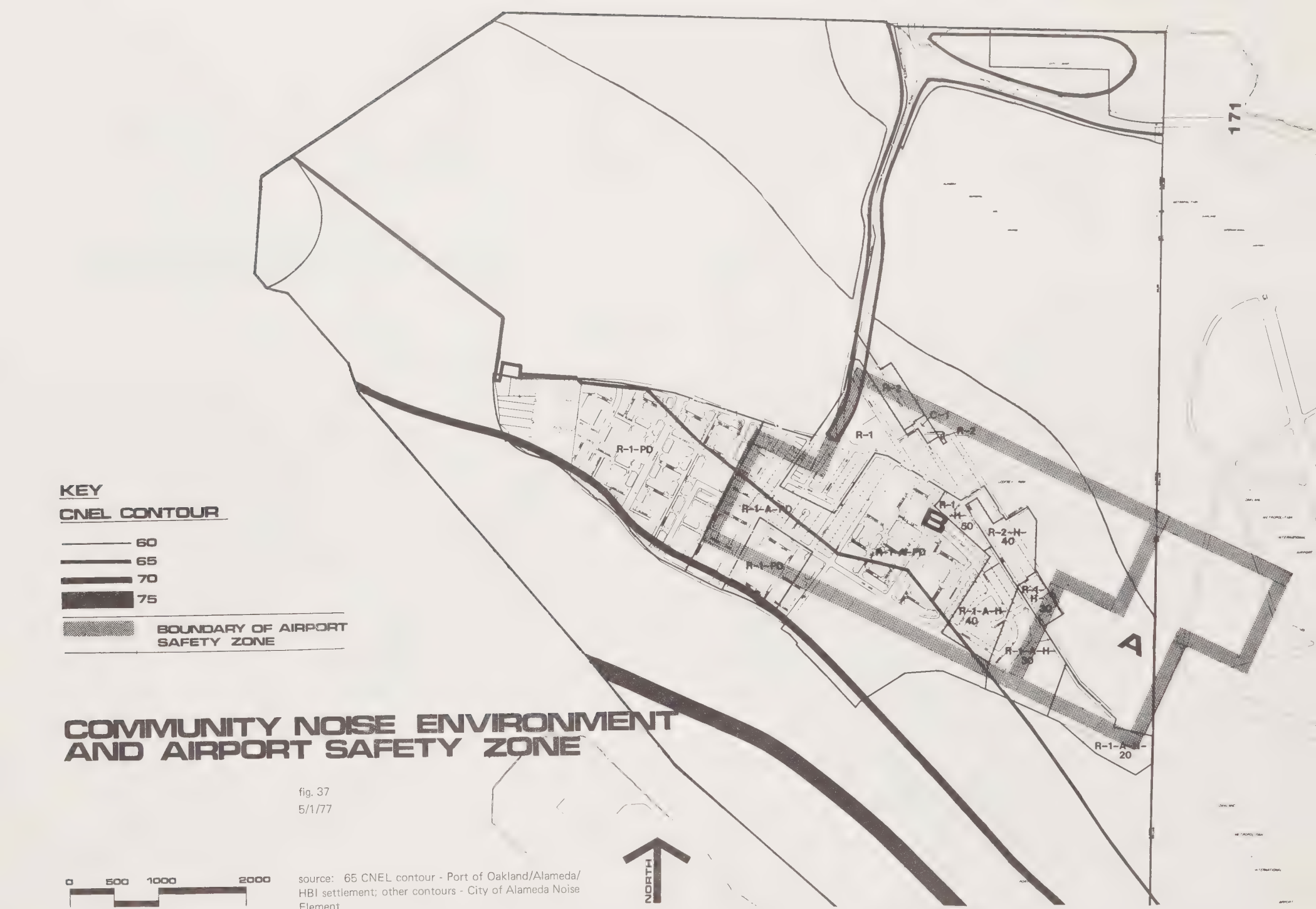
NORMALLY ACCEPTABLE: Specified land use is satisfactory, assuming buildings are of conventional construction without special noise insulation.

CONDITIONALLY ACCEPTABLE: Detailed analysis shall be required for all construction and noise insulation features shall be included in building design. Generally, conventional construction will suffice, but with closed windows and fresh air supply systems or air conditioning. This requirement shall be applied, irrespective of any projected decrease in CNEL for the area. Where the CNEL is 65 dB or greater, residential and commercial uses which give emphasis to outdoor activity should be discouraged.

NORMALLY UNACCEPTABLE: New construction or development should generally be discouraged. Emphasis should be given to reduction of noise at the source, transferring development rights, delaying development until noise reduction has been accomplished and other methods of precluding the effects of excessive noise. Normally Unacceptable uses should not be permitted unless it can be clearly demonstrated to the satisfaction of the City that no Normally or Conditionally Acceptable use and/or site is feasible and available. Should development and construction proceed, a detailed analysis of the noise reduction must be made and needed noise insulation features included in the design.

CLEARLY UNACCEPTABLE

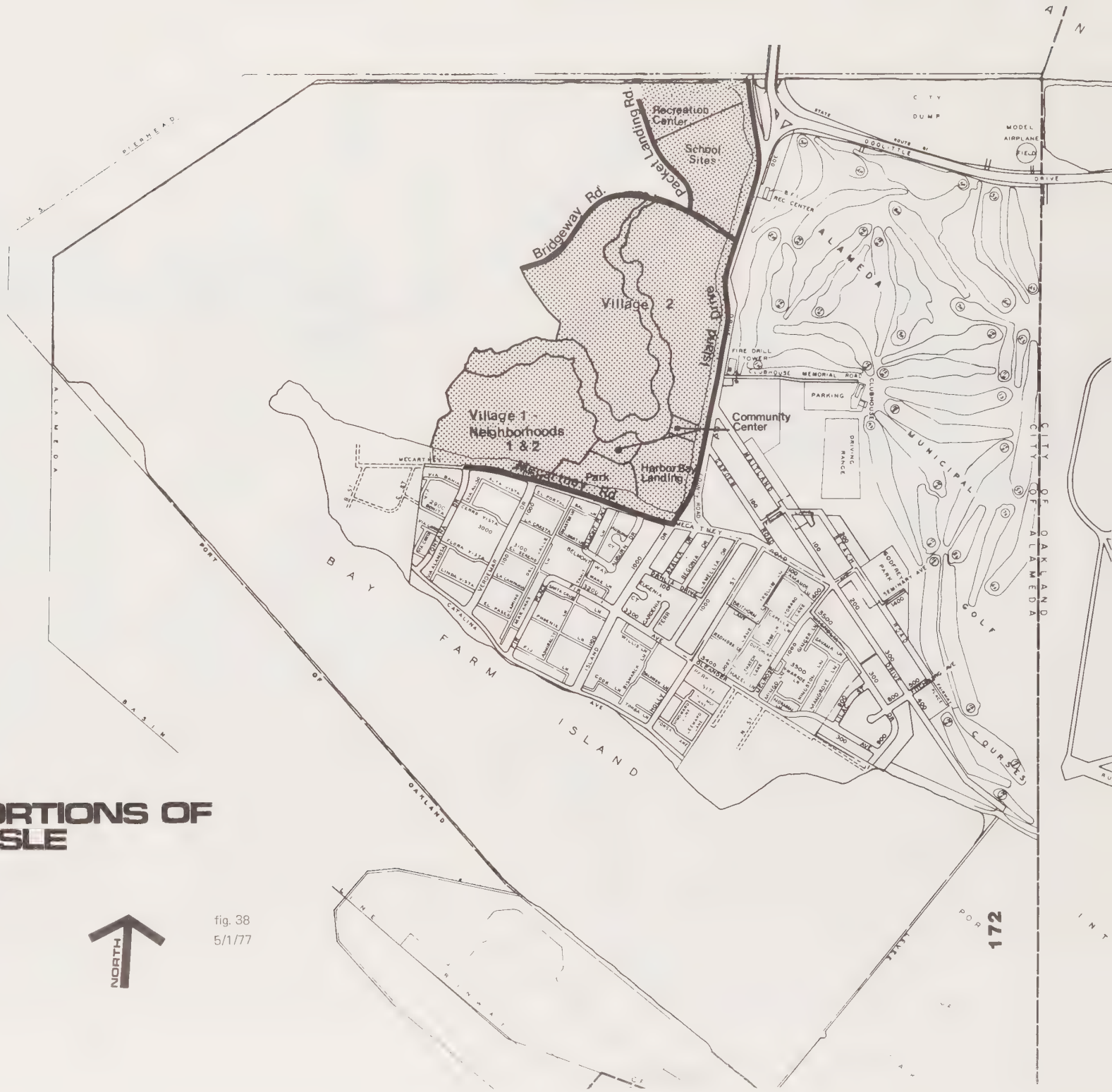
Table 13



COMMUNITY NOISE ENVIRONMENT AND AIRPORT SAFETY ZONE

fig. 37
5/1/77

source: 65 CNEL contour - Port of Oakland/Alameda/ HBI settlement; other contours - City of Alameda Noise Element



APPROVED PORTIONS OF HARBOR BAY ISLE

0 500 1000 2000

SCALE IN FEET

NORTH

fig. 38
5/1/77

Harbor Bay Isle Development

Background

Various proposals for the development of the Harbor Bay Isle property have been made since the Reclamation District began the fill process. The 1968 DMJM General Plan approached the issue of future development of Bay Farm Island in terms of its three levels of development: Policy Plan (high development), Horizon Plan (medium development), and Trend Plan (low development). Both the Policy Plan and the Horizon Plan assumed the Southern Crossing. Under the Policy Plan, intense residential development would generate a Bay Farm Island population of 25,000 and substantial commercial and industrial facilities. The Horizon Plan provided for an equal mix of single-family and townhouse-apartment dwelling units up to nearly 7,000 dwelling units for Bay Farm Island, with Harbor Bay Isle providing all the multi-family apartments and the bulk of the single-family homes, generally in clusters rather than detached. Under the Trend Plan, without the Southern Crossing, development of the residential, commercial and industrial would be less intense, with the Bay Farm Island population ranging between 16,000 and 18,000.

In 1972, Harbor Bay Isle Associates presented a land use plan which included nearly 10,000 units of housing, mostly in multiple unit arrangements on a complex network of lagoons. In 1973, Alameda voters indicated, through passage of charter amendment Measure A, approval of policies aimed at limiting the residential density of the City, and the Harbor Bay Isle development applications were subsequently withdrawn.

The developers prepared another land use plan which held to the limits of Measure A and proposed 4,950 residential units at an R-2 density level. An EIR prepared on the project was certified by City Council as adequate, but the Council denied the application for rezoning of the residential area to R-2, and subsequently the land was rezoned single-family, R-1 with a Planned Development overlay.

The City has not yet accepted any overall master plan to guide the development of Harbor Bay Isle. The developers have presented various proposals and modifications, but current planning for Harbor Bay Isle has been proceeding on the basis of a development for a 3,200 unit development. This development has included lagoons, five residential villages, schools, parks and other recreational facilities, a community shopping center, other commercial uses, and light industrial uses. Adjustments within this development have been made as the project has proceeded.

The City Planning Board approved a planned development application for two neighborhoods of single-family homes in Village I in April of 1974. This action was challenged in a lawsuit filed the next month by the Port of Oakland, which was the first of a series of lawsuits involving the impact of the proposed HBI development upon the City of Alameda and Oakland International Airport.

During a two year period of litigation, the City continued to process the applications for Neighborhoods One and Two in Village I and issued all necessary approvals for a complex of model homes in Neighborhood Two. The Planning Board also approved a Planned Development application for all of Village II and began the subsequent review process of maps for Village II. The City and the developer worked out a schedule for the construction of Island Drive. Other aspects of the development received some preliminary review by the City, but were ultimately held in abeyance pending the outcome of the litigation.

After lengthy negotiations, the parties involved in the lawsuits over Harbor Bay Isle emerged in

July of 1976 with a Settlement Agreement. The main terms of the Agreement were incorporated into a Stipulated Judgment entered on August 17, 1976 in the Superior Court for Alameda County which terminated all existing litigation.

The parties agreed to the location of the 65 dB CNEL line. A two year moratorium was set on residential development in HBI south of that 65 dB CNEL line, with the exception that the Port could exercise an irrevocable option to obtain a noise easement over all of HBI's property south of that line. The Agreement included a provision that representatives of the City, the Port of Oakland, and HBI will meet regularly to work collaboratively on the solution to common problems, and these meetings have been taking place since the Agreement was made.

Village I

The area designated as Village I is 95.6 acres zoned R-1-PD which the developer originally proposed be developed as seven neighborhoods of single-family cluster houses. Planned development applications and tentative maps have been approved for Neighborhoods One and Two, comprising approximately 32 acres and containing 239 units of housing. One of the conditions imposed by the City for planned development approval was that the maximum density for all of Village I would be 8.5 units per gross acre. The street system is to be private and designed according to planned development criteria, rather than conventional City standards for lot and block areas. Space is available for two small common neighborhood recreational areas, most probably swimming pools.

Village II

The area designated as Village II is 67.5 acres zoned R-1-PD to be developed as single-family detached homes on individual lots. Planned development applications and tentative maps have been approved for the totality of Village II, allowing 365 units of housing to be constructed. The street system is to be public, constructed according to City standards.

Harbor Bay Landing-Community Center

A shopping center-community center complex is planned for the area immediately northerly of Mecartney Road and westerly of Island Drive. In October of 1976, City Council approved enabling rezoning of part of the area from residential to C-2-PD. The Planned Development application and the Tentative Map for this complex have been approved by the City.

The ten-acre shopping center is planned to include a food supermarket, restaurants, a service station, a lagoon-oriented courtyard of retail shops and an office building.

The community center as proposed will contain facilities for community purposes, such as a library, theatre and church sites. A Planned Development amendment has been granted to enable the temporary use of one of the intended church sites as an Information Center for the Harbor Bay Isle development. A 6.1 acre city park, zoned "O", will be adjacent to the shopping center-community center complex.

Harbor Bay Isle Club

A private recreational center is planned for a site at the northeast corner of the HBI project on the San Leandro Channel westerly of Old Maitland Drive. A 10.3 acre site was rezoned in late 1976 from residential to C-2-PD, the Central Business, Planned Development District. The Planned Development application and the Tentative Map have been approved by the City.

About 9 acres of the site are developable and the remainder is under water or subject to tidal influence. Planned facilities include a clubhouse, a recreation building, a swimming complex, and approximately 20 tennis courts. The buildings will be arranged around a central plaza. The

City required the provision of public access along the bay edge, including a pedestrian path and a bike path.

School Sites

Two public school sites have been specified for a 17 acre site immediately southerly of the Harbor Bay Isle Club. One is planned for grades K through 5, and the other is planned as a middle school.

Specific Restraints on Future Development

Introduction

The future of Harbor Bay Isle development is affected by a variety of factors, some of which pose potential restraints. Some of these factors have been considered in a previous section on general restraints for all of Bay Farm Island. In this section, the focus is particularized upon Harbor Bay Isle.

Sewerage

The concerns of the East Bay Municipal Utility District about the available capacity to absorb sewage from Bay Farm Island are primarily directed at the Harbor Bay Isle development. Harbor Bay Isle has proposed to construct a new pumping station to tie the development into the East Bay Municipal Utility District system. East Bay Municipal Utility District, the City, and the developer are engaged in engineering studies to settle the issue about the adequacy of the system's capacity to absorb the additional sewage the proposed development would produce. If it cannot be settled that the present East Bay Municipal Utility District system has sufficient capacity to handle the sewage, then further discussions and negotiation with EBMUD will be required, possibly delaying tie-ins and thus affecting the timing of development.

Water

Water for the HBI development would come from EBMUD or from water available on the site itself. The scheduling of water services from EBMUD could be affected by the availability of capacity to handle the HBI sewage flow. Also, the drought conditions in California have created a crisis condition in which some new hook-ups might be delayed until the water supply normalizes, especially for landscaping needs.

Locating a source of water beneath the surface of the HBI property is a possibility since the City has three wells in the golf courses across Island Drive that produce approximately 1,000,000 gallons of water per day. If HBI could successfully place a well, this alternate source could potentially provide sufficient water for landscaping and some water for other uses as well.

Soils

The HBI property is land filled with sand and silt which was dredged from the Bay and is held behind a retaining dike. The sand fill has been compacted by heavy machinery, but settlement is possible where the sand fill has been recently moved. Lagoons are being dug, and land elevations in portions of the proposed residential areas are being modified through grading. These activities create the conditions for settlement, which could negatively affect dwellings, paved surfaces, and utility conduits. The City's review process requires that engineering consultants certify that settlement and subsidence are properly allowed for before residential occupancy is permitted.

Drainage

Surface water on the filled land site will be drained by means of grading, drainage ditches, storm sewers and lagoons. Grading can promote direct drainage into the Bay. A lagoon system is being dug to provide sufficient water surface area to handle much of the drainage off the land. A lagoon, approximately 40 acres of water surface, passing through Villages I, II and IV can provide the bulk of the necessary interior drainage, but an auxiliary lagoon will be required probably in the industrial area south of Village V. The existing drainage ditches can be filled, but will be a time restraint on some development. A drainage ditch approximately 150 feet from the water's edge in Village III, even when filled, will complicate the construction of dwellings over or near the ditch.

Noise Standards

The location and operations of Metropolitan Oakland International Airport, when considered in the light of the City's Noise Element, pose certain restraints on development. In the areas proposed for residential development generally north of Mecartney Road in Villages I through IV, CNEL levels are in the range of 60 to 65 dB, and City standards provide that residential uses are acceptable on condition that rigid state sound insulation standards are met. Schools, churches, and community center facilities, proposed in the same area, are similarly conditionally acceptable.

According to the terms of the City/Port/HBI Settlement Agreement of July 1976, HBI shall not commence residential construction on residential lots, nor seek to obtain planned development approvals or subdivision approvals for residential lots or construction on residential lots south of the agreed 65 CNEL line of demarcation until July 1978, unless the Port of Oakland exercises its option to purchase a noise easement sooner. Such an easement would discharge the Airport and those using it from liability for any inconvenience to persons or interference with the use of properties caused by the noise, vibrations, or other related effects of operating the Airport in the area covered by the easements.

The Port of Oakland already owns a noise easement over approximately 94 acres of HBI's property. The option in the Settlement Agreement covers all the rest of the HBI land south of the negotiated 65 CNEL line of demarcation.

If the Port of Oakland does not exercise its option to purchase noise easements, the standards of the Noise Element still require that residential development remain normally unacceptable and be discouraged in Village V until CNEL levels fall below 65 dB or until the Noise Element standards are amended.

The City's standards limit development in the currently zoned commercial area at the western end of Village V to indoor uses because the CNEL levels of the area are in the 65 to 70 dB range. Land in areas with CNEL levels over 70 dB is generally limited to industrial uses.

Probable Development Directions

Residential

It is probable that the areas designated for residential use north of the 65 dB CNEL line will be developed through the construction of housing over the next eight to ten years. Sales of cluster homes in Baywood Village, the first two neighborhoods of Village I, have already begun. Since the entirety of Village II has already received preliminary City approvals, it can be anticipated that the construction of these single-family detached homes will follow soon upon the finalization of the lagoon edge and completion of access roads and utility hook-ups.

Village I is divided nearly in half by the lagoon. Since cluster single-family housing is approved for Baywood Village, similar cluster housing for the rest of the area south of the lagoon would provide continuity and compatibility of housing type and density. The rest of Village I north of the lagoon could be appropriately developed as either cluster housing in continuity with the style and density of Baywood Village or as detached single-family omes in continuity with Village II. Because of the comparative ease of road and utility hook-up access from Mecartney Road, the development of the rest of the southern portion of Village I can be expected to be developed rather early in the phased build-out of the Harbor Bay Isle project.

The precise type of housing development for Villages III and IV is not determined by previous approvals or agreements with the City, other than the current R-1-PD zoning and the standards imposed by Measure A. Villages III and IV will probably contain several housing types, including detached single-family production homes on tract lots and clusters of single-family homes. The City's Housing Element has recommended the inclusion of housing lots and units of varying sizes and prices in new developments.

The most appropriate locations for single-family clusters would be along the bay edge contiguous to widened areas of public open space (discussed in the Open Space section).

Persons in the cluster settings, which are relatively more dense than the detached single-family lots, would have convenient access to the bay edge circulation systems and open space for picnicking and small scale recreational activities.

Residential development in Village V is delayed because of current CNEL levels between 65 and 70 dB. The 1976 Settlement Agreement provided that the developer shall not commence residential development in Village V until July 1978 or until the Port of Oakland exercises its option to purchase a noise easement over Village V. If the Port of Oakland exercises its option, it is possible that Harbor Bay Isle Associates would submit planned development applications to the City soon thereafter, and then proceed with development construction whenever market demand would warrant.

Low and Moderate Income Housing Possibilities

The residential land in the Harbor Bay Isle development north of the 65 dB CNEL line that has not yet received preliminary City review of proposed plans (Villages III, IV, and Neighborhoods 3 through 7 of Village I) could provide some opportunities for moderate invome housing. The City could request that the developer reserve one or more areas of single-family clusters or duplex arrangements for high quality housing but at a lower cost than that anticipated for Village II and Neighborhoods 1 and 2 of Village I.

Though Section 8 housing subsidies are not available for residential construction, the use of Section 8 subsidies is encouraged for the operation of Village V housing, once constructed, so as to promote low income residents in Harbor Bay Isle without compromising on housing quality.

Commercial

Since the Harbor Bay Landing Shopping Center has received preliminary approvals from the City, and the developer and principal lessees are involved in finalizing their plans and designs, it is probable that construction of this commercial area will be underway by 1978. Its location at the intersection of Island Drive and Mecartney Road, where the improvements and utility conduits are virtually complete, indicates that access and connection needs will probably not involve delays.

A 0.6 acre triangular shaped lot separate from the Harbor Bay Landing complex, but across Island Drive at the intersection with Mecartney Road, is available for commercial development. Neighborhood opposition and City decisions determined that a convenience mart would be inappropriate because of the adverse impacts of late hour customer traffic. The area is zoned commercial, and it is probable that an acceptable community service use like a bank could be arranged.

Land at the western end of Village V is currently zoned commercial. It is probable that its development will be postponed until the boundaries of residential and open space uses in Village V are determined. Noise levels in the area are between 65 and 70 dB CNEL, which would allow indoor commercial development under the City's Noise Element standards. It is probable that the bay edge location would make uses like restaurants, motels and office buildings suitable. Marinas are an unlikely possibility because the water is shallow along most of the Harbor Bay Isle shoreline, and it will be difficult to provide protection from wave action. Competition between a shoreline commercial area and the shopping center could be a problem unless the waterfront shopping area is oriented toward commercial uses unique to its bay front location and convenience services for the residential area around it.

Industrial

The nature of the noise environment at Harbor Bay Isle is such that industrial uses are appropriate in areas where the community noise evaluation level exceeds 70 dB. This occurs in the parts of Harbor Bay Isle which are closest to Oakland Airport, that is, areas south of Catalina Avenue and west of Village V (see fig. 37, p. 171).

Bay Farm Island's location next to the Oakland Airport also makes it a suitable location for industrial uses from perspectives other than noise. Particularly if the Airport Road, which has been proposed in the draft Master Plan of the Port of Oakland to provide direct access to the airport, can be developed, an industrial area could be attractive to light industry involved in the manufacture of commodities and in the use of materials generally shipped by air because of their high value and low weight, as well as warehousing and distribution. Since there is very little of this kind of industry in Alameda, the creation of an industrial area on Bay Farm Island near the airport is likely to attract new kinds of industry and industrial employment having little effect on existing industry. Industrial offices, warehousing, storage and other light industrial uses would be more compatible with residential uses than would the heavy manufacturing and fabricating uses that Alamedans are familiar with in the industrial areas along the Estuary. City Line Road has been proposed to provide appropriate access to this industrial area.

Certain heavy commercial uses, and land consumptive commercial (retail oriented) uses can exist in this industrial area as well. For instance, a service station could occur in the commercial area of Village I but a full garage with automobile repair services would be preferably located in the industrial area. Residents of new homes can provide a market for a plant nursery and land consumptive retail use which would be compatible with a light industrial area.

An industrial area on Bay Farm Island would improve the tax base of the community. It would also provide a mixture of uses on Bay Farm Island, providing employment opportunities in close proximity to a large residential area.

Buffering to protect residential areas will be needed however, both by creating a landscaped buffer and by creating a transition in industrial uses and environments. Light industrial uses in enclosed buildings with a light industrial park setting would be most suitable near residential areas. More land consumptive light industrial uses with an outdoor orientation would be suit-

able closer to the airport where noise levels are higher. The area available for industrial development at Harbor Bay Isle is large enough to provide for this kind of buffering and transition in land uses to protect residential areas.

Staging of the industrial area is also an issue, from other perspectives in addition to limiting the amount of industrial development allowed before City Line Road is completed. If the whole industrial development were opened up at the same time, industrial uses would be scattered and City services would have to be provided across areas which remained vacant. Opening up sections of the industrial area for development in stages for tighter control of industrial development would provide for more compact development and more efficient and less wasteful provision of City services. Staging is also more likely from an economic standpoint. Beginning this development at the eastern end near the airport would encourage an airport industrial orientation for this land.

Development of Land Outside Harbor Bay Isle

Specific Restraints on Future Development

Whether the two areas currently used for farming or the smaller vacant parcels on Bay Farm Island would be able to be developed to a more intensive use depends upon several restraining factors. Some of these factors have been considered in previous sections on general restraints for all of Bay Farm Island or specifically in regard to the Harbor Bay Isle development. In this section, specific attention is focused on development restraints exclusive of Harbor Bay Isle.

Sewerage

The City already has a pumping station on Bay Farm Island to which new sewage connection can be made, but East Bay Municipal Utility District has expressed concern about the adequacy of its system to absorb sewage from the City's pumping station if generated by new sources on Bay Farm Island. While East Bay Municipal Utility District's concerns are mostly prompted by Harbor Bay Isle's proposed 3,200 residential units, public facilities and other commercial and industrial uses, the development of the other available land on Bay Farm Island also represents a significant generation of waste material. The City and East Bay Municipal Utility District are currently engaged in engineering studies to resolve the sewage issue.

Water

The water shortage in California has resulted in a situation in which some new water hook-ups, specifically for landscaping, to the East Bay Municipal Utility District system may be delayed until the water supply is adequate to handle expanded development. A subsurface water supply is already available to the land being used for farming, but developers of smaller parcels might not be able to take on the costs and risks of well digging and construction.

Soils

Properties on the Highlands generally have stable soils and protection from flooding. The 0.94 acre vacant parcel at the end of Magnolia Drive is located along an earlier location of the shoreline, and the remains of a dike with sandbags presents differential elevations. Because the soil is stable in that area, excavation and grading can probably adequately prepare the land for structures.

Safety Standards

The City's Safety Element places some of the available parcels at the eastern end of Bay Farm Island within Safety Zone B, which involves some density limits in residential development.

Noise Standards

The 65 dB CNEL line currently bisects the 0.94 acre vacant parcel at the end of Magnolia Drive, making residential development normally unacceptable in the southern part.

Probable Development Directions

Residential

It is probable that the two farm areas and most of the other vacant parcels north of Catalina will be developed as residential as soon as allowed by the City's noise standards and airport safety zone requirements.

The probable ultimate development of the 7.65 acre parcel of vacant land owned by the City on Maitland Drive near the corner of Island Drive as part of the golf course property has not been formerly determined by the City. It currently is zoned "O" for Open Space, and both the Golf and Recreation Commissions have recommended that it remain open space. Its future use might be public, in that the City will be exploring sites on Bay Farm Island for public facilities like a permanent full-scale fire station as well as considering extensions of recreational uses as part of the golf course complex.

This parcel is a potential site for low income housing, but any such development would have to be within the constraints of Article 34 and Measure A. The site is large enough for a well executed planned development of duplexes or multi-family dwellings. It is well located in terms of access to shopping, since the Harbor Bay Landing shopping center will be located across Island Drive. Doctors and dentists will probably also be available in this complex. Some full and part time employment opportunities will probably be immediately available in the Harbor Bay Isle commercial and community center complex or at the nearby HBI Club recreation center. Public transportation to hospitals, social and health care agencies, government offices, and other needed services will be available through the AC Transit network. The HBI community center is planned to provide facilities for all Bay Farm Island including a library, theatre and churches, quite near this site.

This site is an attractive one, with its orientation to the golf course, and would represent a desirable location for lower income citizens in a visually pleasing place with ample recreational access and a measure of security. The attractive site and the proximity of Harbor Bay Isle would challenge the ultimate developer to create a development that is aesthetically pleasing and of high quality construction.

Care must be taken to insure that lower income residents of the proposed site would not become isolated in their own development. The facilities of the nearby community center and churches could be used to integrate the residents into the total life of the Bay Farm Island community. This process would also be promoted if low income housing were part of a mixed use arrangement.

Church Facilities

At present there are no church buildings on Bay Farm Island, and expansion of population through development can be expected to generate requests for church facilities there. The

Community Center complex at HBI provides space for churches. These facilities can utilize the parking facilities of the shopping center and, since the community center is centrally located, pedestrian and cyclist use would be promoted. Church buildings could provide space and facilities for general community activities. The Catholic Diocese has previously owned and planned the construction of a church and associated buildings on a 3.5 acre site on the southeast corner of Mecartney Road and Holly Street. City approvals for the church construction have already been granted.

The 7.65 acre City-owned vacant parcel at the southwest corner of the golf course, the use of which is as yet undetermined by the City, could possibly be developed as a mixed institutional-residential use, as in the case of a church in connection with low income housing.

The City's Noise Element categorizes church uses as conditionally acceptable uses between 60 and 70 dB CNEL, which would include most of the available open land on Bay Farm Island. The community center complex for Harbor Bay Isle, the Catholic parish site and the 7.65 acre City-owned parcel are above the 65 dB CNEL. Most of the other non-HBI open land is located in areas where the CNEL exceeds 65 dB, indicating relatively higher noise exposure levels.

Use of available land outside the general vicinity of the Island Drive-Mecartney Road intersection for church uses does not seem to be advisable. Experience in other large planned communities where land is reserved for church purposes indicates a trend for some denominations to seek sites outside the intended centralized institutional areas. If churches are constructed in this fashion, they often violate locational and design criteria and tend to be incompatible with other uses in the vicinity. The approximately three block triangle formed by the proposed HBI community center, the intended Catholic parish site, and the 7.65 acre parcel provides an adequate amount of land suitable for church purposes.

Commercial

The businesses in the neighborhood commercial zone located at Maitland Drive and Flower Lane provide services to the community residents. The appearance and level of maintenance of this commercial area have improved during the preparation period of this plan. The scale of these commercial uses is consistent with the surrounding housing, and they do not unduly detract from the neighborhood character of the area.

It is probable that the development of Harbor Bay Isle will promote interest in expanding commercial uses on Bay Farm Island outside the main development project. Merchants may be attracted by the expanded population and a chance to open commercial operations independent of the Harbor Bay Isle criteria imposed by the City planning process. Such commercial expansion would tend to have negative effects on both the nearby housing and the commercial uses planned and approved by the City as an integral part of the Harbor Bay Isle development. The Harbor Bay Isle project has the land and the resources to provide adequate commercial services at the community scale for all the residents, employees and visitors anticipated for Bay Farm Island.

Industrial

In a manner similar to the pressure for commercial development outside designated areas within Harbor Bay Isle, there may be pressure to allow industrial development outside the designated industrial area within Harbor Bay Isle. The pressures will be greatest along City Line Road, particularly for re-use of the Gun Club site and the parts of the Golf Course which will be bisected by City Line Road.

Most of the Golf Course and the Gun Club site on the east side of City Line Road are within Airport Safety Zone A, and are only suitable for open space use. Industrial use of these sites would be incompatible with the recommendations of the City's Airport Safety Element.

A section of the Golf Course on the east side of City Line Road and the strip of the Gun Club site on the west side of City Line Road are within Airport Safety Zone B, where only low density industrial development would be permitted. Industrial development of either of these sites would be problematic. The strip of the Gun Club site on the west side of City Line Road is adjacent to residential and will be too small to allow a buffer from the residential. The section of the Golf Course is larger, but has an awkward triangular shape, and will be difficult to develop as a planned industrial area.

In addition, though City Line Road will serve as a truck route, it will also be an entrance to the Highlands residential area. Industrial uses north of Catalina Avenue along City Line Road would not be compatible with City Line Road's use as an access road to the residential.

Open Space Issues

Existing Open Space

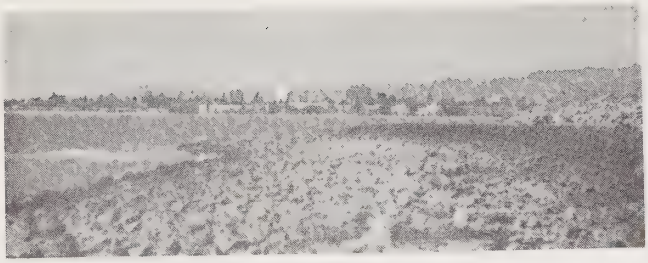
The City currently has three parcels zoned "O" for Open Space: the two municipal golf courses together comprising about 350 acres, the 5 acre Godfrey Park on Beach Road at Seminary Avenue, and a 6.1 acre parcel in the Harbor Bay Isle development on Mecartney Road opposite the townhouses, which is a proposed park site. Other parcels with an actual recreational use include the 5.8 acre parcel on Maitland Drive owned by the City and leased to the Island City Gun Club, an undeveloped City-owned park site at Holly and Oleander Streets, and the state-owned fishing pier adjacent to the Bay Farm Island Bridge. The Harbor Bay Isle development approvals to date include a specific proposal for the Harbor Bay Isle Club, a private recreational center on the San Leandro Channel, and locations for small, nonpublic common neighborhood recreational areas within the approved residential areas. The vacant lands of Bay Farm Island present many opportunities for additional open space sites.

Harbor Bay Isle Development

Shoreline

While currently there are no sandy beaches along the Bay Farm Island shoreline, there are various landscapes, habitats and visual experiences available.

Starting to the immediate west of the Bay Farm Island Bridge and fishing pier, one can observe marsh, mud flats and water fowl in the water of the channel, as well as in the shore area. This environment, subject to tidal influences, is markedly different from the sandy land fill inland at higher elevations. This landscape continues until the shoreline begins to turn in a southwesterly direction where, instead of mud flats and marsh, the shore is made up of large blue-gray rocks, commonly called "riprap." The rock shore at this point meets the water with a more defined edge than along the marshy area closer to the Bay Farm Island Bridge. Tide pools form where the riprap is subject to tidal action. Bird life is more abundant on the open water than on this rocky shore, and the riprap is not suitable for comfortable walking. A walk from the bridge



to the riprap allows a view of main island Alameda that includes one and two-story residences, apartment complexes, and the South Shore Shopping Center. Bay debris collects along the entire shoreline, but particularly along the north shore where the flow of the San Leandro Channel deposits the debris. As the shore turns in a southwesterly direction, a pedestrian viewer would become less aware of the main island and more oriented to the San Francisco skyline and expanses of open water. The riprap along the shore around the tip of the island becomes much steeper, making access to the water's edge difficult. On the southern shore, the rocky edge of riprap continues in a straight line except for a small cove, and the view across the wider expanses of open water is of the west bay shore of the mid-Peninsula.

The bay edge shoreline presents Alameda with an excellent opportunity to insure an attractive and highly usable section of public open space. Shoreline open space should be continuous and of sufficient width to permit proper and reasonable utilization. A continuous band would allow recreational activities like bicycle riding, jogging, vigorous hiking or casual nature walks for a distance of over three miles, but segmentation and interruption due to privately owned property would interfere with maximum enjoyment of the amenities of the bay edge shoreline by the public.

The City has already indicated its intent to ensure a continuous band of usable public open space along the shoreline of the Harbor Bay Isle development. When the City reviewed the Tentative Map for the Harbor Bay Isle Club, a private recreational center to be located on the San Leandro Channel near the Bay Farm Island Bridge, the developer was required to add an approximate 55-foot strip of land for public open space of sufficient width for separate pedestrian and bicycle paths. In March of 1977, the City Council, by resolution, indicated their intent to require a band of continuous public open space along the Bay Farm Island shoreline in the Harbor Bay Isle development.

A continuous shoreline band of public open space would fulfill some other desirable functions as well as providing recreational opportunities. Such open space, if properly laid out, could provide a valuable protective ecological barrier between the fragile marsh environment along the San Leandro Channel and nearby residential development, though unregulated public access could damage the marsh environment. A zone of protection to residential development is provided from the hazard of a tsunami (tidal wave) which, according to the City's Seismic Safety Element, is potentially possible along the Bay Farm Island shoreline, but not in the interior of the Harbor Bay Isle project if elevations are properly designed. Also, a drainage ditch approximately 150 feet from the water's edge in Village III represents a constraint on residential development because of differential settlement problems. The shoreline band can be widened at various points to provide recreational uses additional to the continuous circulation systems for bicyclists and pedestrians. Picnicking, kite flying, and similar activities would be suitable for a water's edge location. Also, parking should be provided for persons traveling to the shoreline open space by automobile. Such widened spaces would be most appropriately placed at locations with the best views of San Francisco. Cluster single-family or medium density residential development could then be placed nearby, so that persons in residential settings relatively denser than detached single-family housing would have easy access to this open space.

The Bay Farm Island shoreline could support a larger park site enabling recreational activities on a larger scale, possible a regional park. Such a park could be located in Village V near the proposed commercial zone. The community noise environment level of Village V is between 65 dB and 70 dB. According to the City's Noise Element, park uses are normally acceptable up to approximately 67 - 68 dB, and normally unacceptable above that level. Any park structure would require careful attention to noise insulation standards, and development of such a park should be delayed pending further studies of noise levels in the area.

The design and size of this public shoreline will play a significant role in determining who manages the area and how it will be managed. If management functions can be handled by the East Bay Regional Park District in conjunction with the San Leandro Bay Park, then the District should be involved in planning the development and configuration of the public access shoreline.

Lagoons

The lagoons provide some general open space-related functions in addition to their necessary drainage function. If properly landscaped, a lagoon provides a visually attractive setting for persons nearby. Small sailboats will be able to navigate the lagoon from the northeasterly sector to the southwest sector of the project area, but the inflow and outflow connections to the Bay are underground, retaining such sailboats in a landlocked lagoon. Such boating provides both active recreation for those persons sailing and passive visual enjoyment for viewers who would find passage of sailboats interesting and attractive.

The project approvals to date call for an open space band along the lagoons which include separate pedestrian and bike paths. This bike path system will provide a leisurely alternative route from residential areas to the main trip collectors in the Harbor Bay Isle development. These lagoon edge paths are primarily for the use of Village residents and their guests, rather than the public-at-large, which is reflected in the maintenance responsibility being placed upon the Homeowner's Association rather than the City.

Harbor Bay Isle Club

A private recreational center proposed for a 10.3 acre site on the San Leandro Channel near the Bay Farm Island Bridge has received preliminary approvals by the City. Members and their guests will be able to use the largest private tennis club in California, with ample facilities for swimming and other sports. A clubhouse will have restaurant facilities and opportunities to enjoy the water's edge vistas. An approximately 55 foot band of public open space along the water's edge has been provided so that public access through pedestrian and bike paths is assured. This private recreations center site is currently zoned C-2-PD. Even though some auxiliary commercial activities will be taking place, as in the sale of equipment or the selling of food and drinks in the clubhouse. the primary activities are recreational on open tennis courts and swimming pools and attached areas of relaxation. It would be more appropriate to designate this land use as open space.

Common Non-Public Open Space

The Harbor Bay Isle proposed development includes the concept of common open space areas for the use of Village residents. These are proposed as private, rather than public, and the responsibility of ownership and maintenance is assigned to the Homeowners' Association. Such common areas can provide spatial and visual relief from the constrictions of single lots or single homes in cluster arrangements. Greenbelts can provide visual corridors and actual environment for movement as alternatives to roadways and lagoons. The proper layout of larger "commons" can provide sufficient open space for either some forms of active land-based recreation or for swimming pools.

It is important that sufficient common nonpublic open space be provided to give project residents sufficient "breathing room" close by their homes. If the layout of the residential areas is too tight without ample common open space, the quality of life in the Harbor Bay Isle project will be adversely affected.

While no firm standards are available, the provision of half an acre of nonpublic common open space (exclusive of the regular lagoon edge bands) for every sixty dwelling units would seem sufficient. For example, if homes were grouped in clusters of 15, there would be provided a greenbelt or commons of one-half an acre for every four clusters. Large blocks of single-family detached homes, especially with yard or patio fencing, need similar amounts of nearby common open space.

Interior Parks

In addition to a bay edge park, the lagoons and the interior non-public common open space, the expected population concentration in the Harbor Bay Isle development will require some interior public parks.

The 6.1 acre park approved near the community center shopping complex at Mecartney Road and Island Drive and will serve persons in the Highlands of Bay Farm Island as well as residents of Harbor Bay Isle, but since it is provided in and for the new development, it can be totally included in contributing toward reaching the park needs created by Harbor Bay Isle. According to the standards for public parks discussed in the General Open Space section, at least an additional well-placed interior park is needed, and each interior public park should be large enough to allow team sport activities, athletic courts and picnic areas.

School Sites as Open Space

The Harbor Bay Isle development has approximately 17 acres for public school sites. One is under construction on an 8-acre site in the northeast sector of the project area between the Harbor Bay Isle Club recreation center and Bridgeway Drive. The schoolground will provide some open space for active recreation and passive enjoyment in connection with the school program. The second school site is on an 11-acre public land site in the western sector of the project area between Mecartney Road and the shoreline to the north. It would be advantageous to join that school site with an interior public park.

Open Space Outside Harbor Bay Isle

Island City Gun Club Site

A City-owned parcel of approximately 5.8 acres located at the eastern end of Maitland Drive near Magnolia Drive is currently used as an outdoor gun range. The City leases the land to the Island City Gun Club. It is a 20-year lease, currently leased until 1980, with an option to renew (at the option of the lessee) until the year 2000. The use is a pre-existing nonconforming one with a use permit that runs concurrent with the lease.

This use is incompatible with the adjacent single-family homes and the contiguous parcel designated for residential development in this Plan. The City's Noise Element indicates reports of excessive noise from the range and suggests that the gun range and residential dwellings are mutually incompatible and that an alternate location should be found. Other negative impacts of the gun range on neighboring residential uses are traffic and potential safety hazards.

The proposed right-of-way of City Line Road will pass south of the gun club and should not interfere with the club's present operation. City Line Road is planned to handle heavy trucks passing to and from the industrial area in the southern sector of the Harbor Bay Isle development near the Metropolitan Oakland International Airport. The noise and vibration impacts of this industrial traffic, the design and access constraints of the remaining parts of the property, and the land use limits imposed by the airport safety zones of the City's Safety Element cumulatively make residential development inappropriate and open space the best use of the land. Subject to the rights and restrictions of a pre-existing, nonconforming use and the terms of the gun club's lease, the portion south of the roadway can serve as a landscaped buffer. The portion east of the roadway, which will be contiguous to the airport land, should not be developed as residential, commercial or industrial and should remain vacant. This section is included within Airport Safety Zone B of the City's Safety Element which restricts development.

Holly-Oleander Parcel

The undeveloped 2-acre site at the corner of Holly and Oleander is owned by the City for park use. Active and passive recreational uses can be adjusted to the scale of the site. The parcel ought to be designated as open space, although the site is not large enough for development as a full service City park.

City Refuse Disposal Site

The 42 acre City refuse disposal site located on San Leandro Bay has the potential for becoming a regional park. East Bay Regional Park District has included this site within the San Leandro Bay Regional Shoreline Plan, and has obtained policy agreement from the City Council to lease this site to the District after it is no longer needed as a disposal site.

Circulation Issues

Introduction

Bay Farm Island is isolated from the East Bay's major transportation corridors. Island Drive is the only access road to existing development. There are two alternative routes from Island Drive to the Nimitz Freeway; one across the Bay Farm Island Bridge through the main island to one of the Estuary bridges or tube and the other by way of Doolittle Drive and Hegenberger Road. Because of limited funding and the concern with any transportation improvements which threaten the natural environment or residential neighborhoods, few additions to the East Bay transportation corridor to improve access to Bay Farm Island are anticipated. The context section of this plan discusses the East Bay Transportation System and those modifications in the system which could be anticipated.

As of January 1975, there were approximately 1800 dwelling units in the Highlands residential area. In 1976, the City of Alameda Engineering Department undertook a series of trip generation counts. The results of this analysis indicate that single-family homes in the Highlands are producing, on the average, 8.3 trips per dwelling unit. An average trip generation rate of 11.7 trips per dwelling unit was observed at other locations throughout the City. Perhaps trip generation rates are lower on Bay Farm Island because the distance to shopping and other services creates a more organized approach to shopping and other trips.

The Harbor Bay Isle property is proposed to include 3200 dwelling units, as well as approximately 40 acres of commercial and 300 acres of industrial uses. Other vacant parcels proposed in this plan for future residential development could create at full development as many

as 500 additional dwelling units on Bay Farm Island. At 9.9 TE per dwelling unit for Harbor Bay Isle, these new developments would generate daily about 31,000 external trips - that is, trips beyond the boundaries of Bay Farm Island - and 13,000 trips within Bay Farm Island.* Use of the existing transportation network will increase and new transportation facilities, including new roads, will be needed to serve the transportation needs of these developments, particularly Harbor Bay Isle. The location and size of future roads on Bay Farm Island will be influenced by existing and approved roads and their capacities. The number, size, and location of transportation network modifications on Bay Farm Island will also be limited by the need to minimize the use of the automobile and its impact on residential areas, both on Bay Farm Island and the main island.

Existing Transportation Network

Transit

Currently, Bay Farm Island has some bus service from AC Transit. Line 79 travels between Oakland and Bay Farm Island via High Street at approximately 25-minute intervals between Monday and Friday, with no service on weekends. Line W-1 travels between Bay Farm Island and San Francisco during weekday commute hours. Line 63 travels between the main island of Alameda and BFI via Otis Drive at approximately 30-minute intervals daily except Sunday.

Existing Roads

Island Drive is presently the only road serving as access to existing development on Bay Farm Island. It carries in excess of 11,000 vehicles daily. Maitland Drive and Mecartney Road have traffic volumes in excess of 3,000 vehicles daily. Several of the side residential streets, Holly Street and Verdemar Drive, have traffic volumes in excess of 1,000 vehicles, but most residential streets on Bay Farm Island have traffic volumes of less than 1,000 vehicles.

Transportation Network Modifications in Progress

Certain modifications to the existing transportation network have been initiated or approved in anticipation of the development of Harbor Bay Isle.

Island Drive

By Fall 1977, modifications to Island Drive roadway will be completed. These alterations converted Island Drive between Doolittle and Mecartney Drives into a four lane arterial with a right-of-way which varies between 140-150 feet and a median which varies between 25 and 60 feet. Along the westerly edge, parallel to the street, is a separate bicycle path and pedestrian way. Extensive landscaping for the west side and median to be executed by Harbor Bay Isle has been approved by the City. A coordinated landscape plan for the east side of the road has been established and will be completed by the City. This landscaping, when completed, will improve the appearance of this road which serves as the entry to Bay Farm Island.

Mecartney Road

Alterations to Mecartney Road have been approved by the City for the section of the road between Island Drive and Fontana Drive to serve Harbor Bay Landing and the portions of Village I which have been approved. The roadway will be 4 lanes, with a landscaped median. Harbor Bay Isle's landscaping plans for Mecartney from Island Drive to Tahiti have been approved by

*JHK and Associates, *Traffic Analysis for Harbor Bay Isle Project* (San Francisco, Nov. 1976). JHK projections modified to include nonresidential areas.

the City. A separate bike path on the northern edge parallel to the road will be provided. Completion of these alterations is expected by Fall 1977.

Bridgeway Road

To provide access to Harbor Bay Isle Village II, the dimensions, location and construction of the portion of Bridgeway Road to the western border of Village II, have been approved by the City. This portion of Bridgeway Road will be four lanes with a 125 foot right-of-way, landscaped median and bike lanes included in the roadway on both sides of the street. Construction of Bridgeway Road should begin in late 1977.

Packet Landing Road

Tentative plans for Packet Landing Road, a two lane road providing access to the Harbor Bay Isle Club from Bridgeway Road, have been approved by the City. The road will have a separate bike path parallel to the eastern edge of the roadway.

Bicycle Circulation System

A bike/pedestrian system has been established for those roads and areas in Harbor Bay Isle which have been approved. Three bicycle circulation systems are provided:

An internal system of separate two-way paths along the edges of the lagoons that would allow riders to pursue a leisurely route between homes and the major trip collectors on Bay Farm Island without having to ride on roadways. Children in HBI homes will be able to ride bicycles to school with few contacts with the streets.

A separate two-way bike path along the Bay edge adjacent to Harbor Bay Isle Club which, when extended around the entire perimeter of the HBI development, would provide an unbroken route for both the casual and the more serious recreational riders. This bay edge bikepath could be tied into the City's system of bicycle paths and East Bay Regional Park's plans for bicycle/hiking trails around San Leandro Bay.

Separate two-way bike paths or one-way bike lanes have been provided parallel to or along the roadways of arterial streets to promote bicycle use for errands, casual recreational trips and commuting to work, and to provide routes for serious bicycle enthusiasts.

Possible Network Modifications

City Line Road

The City has applied for funding under the Public Works Act for the construction of two lanes of City Line Road, which would eventually become a four-lane arterial with a median from Doolittle Drive along the Oakland-Alameda border to connect to Maitland Drive and extend about 300 feet south of Maitland Drive. The road would provide another access, in addition to Island Drive, to residential developments on Bay Farm Island. It is also planned to eventually connect this road to the industrial area proposed within the Harbor Bay Isle property. This road would provide an access for industrial traffic so that it would not pass through residential areas.

Protection of Residential Areas

A major issue in circulation planning for Bay Farm Island is protecting residential areas both within Bay Farm Island and on the main island from the impacts of traffic resulting from new developments on Bay Farm Island.

Main Island Residential Areas

The amount of traffic which enters residential areas on the main island from Bay Farm Island is dependent on the capacity of the Bay Farm Island Bridge, the only access between the two areas. Harbor Bay Isle, with up to 3200 dwelling units and industrial and commercial development, could add a demand of approximately 1300 peak hour vehicles on the Bay Farm Island Bridge. Other developments will also put pressure on the Bay Farm Island Bridge, particularly the expansion of Oakland Airport.

The Bay Farm Island Bridge and its controlling intersections have .6 lanes of reserve peak hour capacity in each direction which could accommodate a 33% increase in peak hour traffic amounting to only about 460 vehicles.* The development of Harbor Bay Isle will soon fill the bridge to capacity. The increasing congestion at the bridge as Harbor Bay Isle develops will force traffic with destinations outside the main island to find alternative routes rather than to cross the Bay Farm Island Bridge and enter residential streets on the main island.

A survey of travel time from Bay Farm Island to Route 17 (Nimitz Freeway) was conducted in October 1976 to determine the amount of time required to travel to Route 17 at High Street from Bay Farm Island using two routes:

1. Across the Bay Farm Island Bridge to the main island over the High Street Bridge to Route 17.

2. Along Doolittle Drive to Hegenberger Road and along Route 17 to High Street.

The survey showed the average trip during peak periods took 3 minutes longer to travel via Hegenberger Road, that is a total of 8 minutes along Hegenberger Road versus 5 minutes across the Bay Farm Island Bridge.** It is projected that, when Harbor Bay Isle is completely developed, the wait at the traffic signal on Island Drive to cross the Bay Farm Island Bridge would be at least 2 to 3 minutes.*** There would be no such wait to take a right turn to Hegenberger so that the time required for both routes will be about equal during peak periods, assuming both routes become congested at approximately the same time. However, past experience indicates that some people may rather wait than go the long way around. Also, it is estimated that 80 to 90% of the present Bay Farm Island Bridge traffic is not through traffic destined for the Nimitz Freeway, but rather destined for Central Alameda and must use the Bay Farm Island Bridge as the egress from Bay Farm Island.**** As was mentioned previously, vehicles with destinations in Alameda will fill the Bay Farm Island Bridge to capacity during peak

*The capacity of bridges is actually determined by the traffic flow through intersections on both ends of the bridges. Capacity is calculated at service level C.

**Environmental Impact Planning Corporation *Environmental Analysis of Alternative Traffic Routes in the High Street Corridor in the City of Alameda*, (San Francisco, Feb. 1977) p. 14. This report contains more detailed analysis of the traffic anticipated to cross from Bay Farm Island into the main island when BFI is completely developed, and the environmental impacts of this traffic.

***D.K. Goodrich

****EIP, High Street Report, op. cit. p. 15.

hours. If the capacity of the Bay Farm Island Bridge or its intersections were increased, more vehicles from Bay Farm Island, which could use Doolittle Drive and Hegenberger Road because their destinations are outside the main island, would find it easier to use the Bay Farm Island Bridge and drive residential streets on the main island.

Residential Areas on Bay Farm Island

Traffic on Residential Streets

The existing traffic on residential streets on Bay Farm Island is not a serious problem. Most streets are not collector streets, but only serve local use, and their average volumes are under 1,000 per day.

A few residential streets, Maitland Drive, for example, function as collector streets and have higher volumes. In the future, since most of Bay Farm Island is still vacant, alternatives to using residential streets as traffic collectors can be provided, and traffic in residential areas can be minimized. Vehicles can be channeled into major non-residential streets rather than be allowed to penetrate into residential areas. The roads which have been approved to date for Harbor Bay Isle have initiated a separation of through traffic and heavy traffic from residential areas by providing major, nonresidential collector streets to connect the major areas within Harbor Bay Isle.

(The proposal for City Line Road is intended to provide a bypass road so that the traffic, particularly trucks, associated with industrial development on Bay Farm Island will be diverted from residential areas.)

Vehicular Access to Shoreline

Another issue is providing access for the public to the shoreline around the edge of the Harbor Bay Isle property without bringing traffic into residential areas. There are several alternative methods. A continuous shoreline road circling the Harbor Bay Isle property adjacent to the bay edge open space would provide maximum shoreline access and visibility for the public. It would also open up the Harbor Bay Isle development visually by providing views of the water unobstructed by other uses around the bay edge. A shoreline road would offer maximum separation between public shoreline open space and the other uses, protecting the public use of these areas by eliminating the possibility of encroachment by adjacent private owners and also providing for the privacy of adjacent residential properties. The problem with a continuous shoreline road is that it would be a traffic generator, bringing traffic into residential areas. Such a road encircling the entire development would be heavily traveled and could create a barrier between the development and shoreline.

Shorter stretches of shoreline road, particularly in now residential areas of the project, would provide vehicular access to the shoreline for those who could not or would not make use of pedestrian or bicycle shoreline access. A bicycle and pedestrian path, such as the one already approved for the Harbor Bay Isle Club, could be used to provide public access to residential parts of the shoreline. Stretches of shoreline road could be provided in residential areas to give some visual openness and expansive views of the water to highlight Harbor Bay Isle's identity as a shoreline community, and to reinforce the public nature of the shoreline open space. These roads could be designed to discourage through traffic and assure that the roads do not create barriers between the development and the open space.

De-Emphasizing the Automobile Orientation

Some of the traffic generated by developments on Bay Farm Island could be reduced by de-emphasizing the automobile orientation of Bay Farm Island. One way to accomplish this is by making alternative forms of transit more inviting and integrating them into new development.

Public Transit

New developments can be designed to encourage public trancit. Defferent housing layouts affect the use of transit. A compact development is easier to serve by public transit. Street design has an effect on use of transit. Bus turnouts and comfortable bus stops can facilitate bus use, as could park and ride lots for bikes and/or cars suitably located in central locations on Bay Farm Island and within Harbor Bay Isle.

Bus lanes could also encourage transit use. With up to 3,200 dwelling units proposed for Harbor Bay Isle and other developments on Bay Farm Island, the Bay Farm Island Bridge will be congested, and lines of waiting vehicles will develop at the Doolittle/Island Drive intersection. Projections at this time indicate traffic could be backed up a quarter of a mile at peak periods.* A bus lane provided at the approach to the Island-Doolittle intersection would allow buses to bypass the line of automobiles waiting for the green signal. Such a bus bypass lane could provide a slight saving in time and could possibly act as an incentive to increased use of public transit.

In addition to developing facilities, other methods of encouraging transit use on Bay Farm Island could also be pursued. Transit incentives such as reduced fares and excellent passenger amenities could be provided for commuting workers. If AC Transit were to begin operating at the outset of each Harbor Bay Isle Village's opening, an early pattern of transit ridership rather than reliance on the auto could be established. To facilitate prompt initiation of AC Transit service, as each section of Bay Farm Island develops, it will be helpful to transit planners to have information on the work destinations of new residents.

Bicycle Circulation

Alameda has an opportunity to obtain an excellent bicycle circulation system on Bay Farm Island. Since the Harbor Bay Isle land is undeveloped fill without contour problems, it can be shaped and planned to allow the layout of an optimal bikeway system. Nothing is presently included in the City's Bicycle Route Master Plan for Harbor Bay Isle, but a route is provided for Doolittle Drive and Mecartney Road.

The planning process can facilitate the use of bicycles as a mitigating alternative to automobiles by insuring that bikeways are laid out as convenient linkages between homes, community facilities, open spaces, and other trip collectors and generators.

As described previously, the portions of the Harbor Bay Isle development which have been approved by the City have established the basis of three bicycling systems: along the lagoons, the bay edge and the major roads. Separate bike paths are approved for the lagoon and bay edges. As planning for the bicycle circulation system along major roads evolved, it was decided that because of the safety problems involved in intersection planning for separate bike paths parallel to roads and their maintenance and land costs, bike lanes along the shoulders of arterial streets were acceptable. If proper planning keeps automobile parking and driveways off arterials, two of the major safety problems for cyclists in bike lanes will be eliminated.

*D.K. Goodrich

Reducing Commuter Traffic

Industrial and commercial uses on Bay Farm Island can provide employment opportunities for Bay Farm Island residents close to their homes. Workers in those commercial and industrial areas should also be given the opportunity to live on Bay Farm Island. This can be encouraged by requiring home builders to provide a variety of housing prices and types. Then bike, public transit, and pedestrian systems can be designed to reinforce those home-work-shopping trips that occur on Bay Farm Island. Car and van pooling could be encouraged for both those who live and those who work on Bay Farm Island as another means of reducing automobile traffic.

Land Use Recommendations

Residential Areas

1. Within Harbor Bay Isle

   a. The residential portions of Village I south of the lagoon should be designated Single-Family. The most appropriate development approach is cluster housing to continue the housing type and density of Neighborhoods 1 and 2, called Baywood Village.

   b. The residential portions of Village I north of the lagoon should be designated Single-Family. The development approach could be either cluster housing to provide continuity with the housing across the lagoon, or, alternatively, detached single family lots to provide continuity with Village II.

   c. The residential portions of Village II should be designated Single-Family. Approved plans and maps call for detached single family lots.

   d. Villages III and IV should be designated as Single-Family. The most appropriate location for single family clusters would be contiguous to widened areas of public open space along the Bay edge.

   e. Village V should be designated as Single-Family.

   f. No residential development should be allowed within the proposed area of Village V where CNEL levels exceed 70 dB.

   g. Because of the crucial impacts of noise levels on land use planning, all Harbor Bay Isle residential construction should satisfy state and local noise insulation standards as a minimum and should strive, through attention to developments in sound insulation technology, to maximize the protection of future residents from impacts of aircraft-related noise; interior noise levels should be limited to 45 dB on all units.

   h. Adequate setbacks should be established along major roads to protect residential uses from surface noise.

   i. The number of dwelling units for the portion of Bay Farm Island commonly referred to as Harbor Bay Isle shall not exceed 3,200.

2. Outside Harbor Bay Isle

   a. The current R-1 districts in the Highlands should remain Single-Family. Parcels with CNEL levels in excess of 65 dB should have a delayed development overlay, pending compliance with City noise standards and policies.

   b. The current R-2 districts in the Highlands should be designated Special Single-Family so as to establish a basis for downzoning mixed single-family and apartment areas to single-family.

   c. The townhouses (Garden Isle, Islandia, and Casitas), currently zoned R-1-PD or R-1-A-PD, should remain Single-Family.

   d. The land used for agriculture south of Oleander and east of the Garden Isle townhouses should be designated Single-Family with a delayed development overlay, pending a compliance with City noise standards and policies, and requiring conformance with airport safety zone requirements.

   e. The land currently used for agriculture westerly of the Casitas townhouses and currently zoned R-1-PD should be designated as Single-Family with a delayed development overlay, pending compliance with City noise standards and policies. Cluster housing would be relatively compatible with the surrounding development.

   f. The vacant 0.94 acre site at the end of Magnolia Drive should be designated as Single-Family. Any developments must conform to the applicable standards of the City's Noise Element and Safety Element.

   g. Adequate setbacks should be established along major roads to protect residential uses from surface noise.

   h. The 7.65 acre site at the corner of Maitland Drive and Island Drive south of the golf course should be designated Public Use, such as open space, golf course, or a fire station.

Commercial Areas

1. Within Harbor Bay Isle
   a. The proposed community shopping center at the intersection of Island Drive and Mecartney Road should be completed according to the approved Planned Development and Tentative Map applications.

   b. The 0.6 acre triangular shaped lot that is being created as part of the total intersection of Island Drive and Mecartney Road should be developed as a commercial use. A service facility like a bank would be an appropriate utilization of the site.

   c. Some commercial uses would be appropriate within the industrially zoned area east of Village V. For example, storage facilities and automotive repair services will be needed for the expected population of Bay Farm Island, and these commercial activities are best placed within the industrial zone because of the visual and auditory impacts of these operations.

2. Outside Harbor Bay Isle

   a. The boundaries of the C-1 Neighborhood Business District located at Maitland Drive and Flower Lane should be limited to the lots of the two current commercial uses.

   b. No additional commercial land uses should be allowed on Bay Farm Island outside Harbor Bay Isle.

Industrial Areas

1. Within Harbor Bay Isle

   a. The area within Harbor Bay Isle south of Catalina Avenue and east of Village V should be designated as light industrial. Limited commercial uses could be permitted.

   b. A landscaped buffer between the residential and industrial areas should be provided on the south side of Catalina Avenue and the east end of Village V.

   c. Industrial areas on the north side of the industrial road which is the proposed extension of City Line Road, and near Village V should be light industrial park in nature. Industrial uses should be totally enclosed and the area should be landscaped.

   d. More open, land consumptive, light industrial uses should be confined to the areas south of the industrial road and separated from Village V.

   e. Traffic from the industrial areas should be routed so that it does not go through residentially zoned areas.

   f. Until City Line Road is completed and connects to Doolittle Drive, the traffic generation, particularly of trucks, of industrial uses proposed for this area, should be examined, and development of those whose traffic generation is significant should be delayed until City Line Road is completed in order to minimize traffic on residential streets on Bay Farm Island.

   g. Storage facilities required by past City approvals to be placed in the industrial area for the use of residents of Harbor Bay Isle should be sited at the eastern end.

2. Outside Harbor Bay Isle

   a. No industrial land uses should be permitted outside the designated industrial area south of Catalina Avenue within the Harbor Bay Isle property.

   b. No other sites for industrial land use should be designated along City Line Road north of the intersection with Catalina Avenue.


195
MCCARTY RD
MCCARTY INLT
BAY FARM ISLAND
PORT OF OAKLAND
KEY
SCHOOL SITES
OPEN SPACE
LOCATION OF OPEN SPACE AND SCHOOL SITES
0 500 1000 2000
SCALE IN FEET
NORTH

fig. 39

5/1/77

KEY

ROADS
(EXTENSIONS, ALTERATIONS, AND NEW ROADS)

BICYCLE CIRCULATION SYSTEM

CIRCULATION

0 500 1000 2000
SCALE IN FEET

NORTH

fig. 40

5/1/77

Open Space Recommendations

Within Harbor Bay Isle

1. There should be a continuous band of public open space along the shoreline of sufficient width to provide adequately separated bike and pedestrian pathways with well designed, consistent landscaping.

2. The width of and any improvements to the band of public open space along the San Leandro Channel should be designed and adequately sized to protect the fragile environment of marsh, mudflats and bird nesting areas.

3. The shoreline band should be widened at points to provide additional recreational opportunities, especially at locations which have good views of San Francisco.

4. A large shoreline park should be located between Village V and the industrial area. Development of such a park should be delayed until CNEL levels are below the 67-68 dB range. The City should explore the possibility of such a park becoming a regional park.

5. Lagoons should be attractively landscaped, using indigenous low-water consumptive plants so as to provide visually attractive open areas. The lagoons and crossover bridges should be designed to allow small sailboats.

6. Sufficient common nonpublic open space should be provided to give project residents some recreational land near their homes. A minimum standard of one-half an acre for every sixty dwelling units has been proposed by this plan.

7. A public park should be provided in the interior of the residential portion of the Harbor Bay Isle development in addition to the proposed shoreline park between Village V and the industrial area and the approved park in the Community Center-Shopping Center complex. It should be located in Village IV at the intersection of Bridgeway Drive and Catalina Avenue contiguous to the proposed school site. Such an interior public park should be large enough to allow team sport activities, athletic courts, and picnic areas.

8. A landscaped strip of open space should be provided as a buffer between the industrial area and the residential areas in Village V and the Highlands.

Outside Harbor Bay Isle

1. The City-owned parcel on Maitland Drive currently used as an outdoor gun range should be designated open space. The portion of the property south of City Line Road should serve as an open area contiguous to the airport.

2. The City-owned parcel of vacant land at Holly and Oleander Drive should be designated as open space, with active and passive recreational uses appropriate for its size and location.

3. The 42-acre City refuse disposal site should be designated as open space, and its ultimate use as a regional park should be pursued by the City.

Circulation Recommendations

Network Modifications

1. General Standards

a. Several extensions and modifications of existing roads are recommended for Bay Farm Island. The size, the number of lanes, the configuration, and the landscaping of these proposed roads should be compatible with the characteristics of existing roads they connect to and the scale and quality of the proposed contiguous land uses.

b. No residential development should be allowed to front on arterial roads. Residential development should be sited at enough distance from these roads to shield residences from noise and other impacts of traffic.

c. A right turn lane from Island to Doolittle should be installed at that intersection by the developer.

d. No existing residential street should be widened or increased in capacity, particularly those with existing wide right-of-ways such as Island, Verdemar, and Fontana. Excess right-of-way should be considered for landscaping or bicycle paths.

e. No existing residential street should be designated or used as a truck route.

2. Specific Alterations and Extensions

a. **Mecartney Road**

(1) Mecartney Road should be widened from Fontana Drive, the point to which alterations have already been approved, to its existing terminus and then extended to the proposed commercial and open space areas at the western tip of the Harbor Bay Isle property (see fig. 40, p. 196). This extension of Mecartney Road will serve as access to Villages IV and V and to the proposed commercial area and shoreline park.

(2) Mecartney Road and Bridgeway should be the major vehicular access routes for the public to the shoreline at Harbor Bay Isle.

(a) In Village V, the roadway should be aligned along the shoreline adjacent to the shoreline open space.

(b) Parking should be provided at the end of Mecartney Road for bicycle and pedestrian access by the public to the rest of the shoreline open space.

(c) Signs should be placed along Island Drive to indicate Mecartney and Bridgeway as the vehicular route for the public to the shoreline.

(3) It is projected that Mecartney Road between the intersection with Catalina Avenue and its terminus would carry an average of 9,000 vehicles daily and that 2 or 4 lanes in width would be adequate. The peak hour traffic is projected at only 600 vehicles per hour, so two lanes may be adequate.*

*JHK Report

b. **Bridgeway Road**

(1) Bridgeway Road should be extended from the western border of Village II, the point to which its construction is presently approved, to form the boundary between Village I and III and connect to the proposed extension of Catalina Avenue (see fig. 40, p. 196). This extension of Bridgeway Drive would provide access to residential developments in Villages I, III and IV.

(2) It is projected that this extension would carry 7,000 vehicles and that 2 lanes in width would be adequate.*

c. **Catalina Avenue**

(1) Northern Extension of Catalina

(a) Catalina Avenue should be extended from its existing terminus at Fontana Drive along the edge of the Harbor Bay Isle property to connect to Mecartney Road and proceed north along the boundary of Villages I and IV to connect with Bridgeway Road at the western border of Villages I and II (see fig. 40, p. 196). From there, Catalina Avenue should continue along the boundary of Villages III and IV terminating at the shoreline park, which forms the northern border of Village III and IV.

(b) This extension of Catalina Avenue will provide a north-south access road for Villages I, III and IV. It should terminate at the shoreline park, with its final length leading up to the park in order to provide access to the park, increase the park's visibility in the community, and provide views of the bay from this major road.

(c) It is projected that this extension of Catalina Avenue would carry an average of 2,200 to 4,200 vehicles daily and that two lanes in width would be adequate. **

(2) Eastern Extension of Catalina

(a) Catalina Avenue should also be extended from its present eastern terminus at Leeward Lane east along the northern edge of the Harbor Bay Isle industrial area to City Line Road. This extension is intended to provide an alternative to Maitland Drive as a route to City Line Road. It is also intended to create a barrier and buffer between the residential parts of Bay Farm Island and the proposed industrial area.

(b) This road is not intended to carry industrial traffic. Connections from Catalina Avenue to the industrial area should not be permitted.

*JHK Report

**_Ibid._

(c) It is projected that this extension of Catalina Avenue would carry an average of 3,000 vehicles daily and that a width of two lanes would be adequate.*

(d) The responsibility for improvement should be borne by the developer.

(e) The location of the extension of Catalina, near its intersection with City Line Road, should consider safety in relation to the Gun Club.

d. **City Line Road**

(1) City Line Road should be connected to the extension of Catalina Avenue. The airport access road should connect with City Line Road at the same intersection as Catalina Avenue.

(2) City Line Road should be extended into the light industrial area of Harbor Bay Isle. The road should be aligned so that it essentially bisects the industrial land, providing for an approximate equivalent amount of industrial development on both sides (see fig. 26, back pocket). No connection should be allowed to either Catalina Avenue or to Mecartney Drive on the western end of the industrial area.

(3) Construction of the road should be staged beginning at the easterly end so that industrial development proceeds in an orderly fashion.

(4) City Line Road should carry all truck traffic associated with the industrial development. Subject to design constraints, signs should be posted at suitable places, particularly on City Line Road and Island Drive, indicating that City Line Road is the truck route on Bay Farm Island.

(5) It is projected that the extension of City Line Road into the industrial area would carry an average of 10,500 vehicles daily and that 4 lanes would be adequate.**

3. Bay Farm Island Bridge

The capacity of the Bay Farm Island Bridge should not be expanded, either by widening the bridge itself or the intersections at both sides of the bridge. By maintaining the Bay Farm Island Bridge at its existing capacity, it is possible to confine the new traffic demand in the streets of the main island's east end to less than one lane. This is the primary defense against greatly increased traffic, especially through traffic, on all residential streets in the east end.

4. Shoreline Roads in Residential Areas

Stretches of shoreline road adjacent to the shoreline open space should be provided in residential areas of Harbor Bay Isle. These roads should be designed to discourage through traffic and assure that the roads do not create barriers between the development and the open space.

*JHK Report

**Ibid.

5. Bicycle Circulation System

a. The three bicycle circulation systems already established for the eastern rim of Harbor Bay Isle should be extended into the rest of the development:

(1) An internal system of bike paths along the lagoon edge.

(2) A separate recreational bike path around the bay edge. To complete the circle of this bay edge bike path and link it up with the Bay Farm Island street system at the southern end, a bike path should be developed through the industrial area connecting between the bay edge bike path and City Line Road (see fig. 40, p. 196).

(3) Properly designed bike lanes on the roadways of arterial streets.

(4) Drainage and lagoon outfalls should not interfere with the continuity of the bicycle paths.

b. A bike path should also be provided in the landscaped buffer parallel to Catalina Avenue between the industrial and existing residential area. A bike path should also be provided along City Line Road adjacent to the golf course connecting the Harbor Bay Isle Circulation System and Doolittle Drive.

c. Automobile parking and driveways should be kept off the arterials.

d. The City and the Homeowners' Associations should plan and implement an adequate program of maintenance and cleaning of bike lanes and bike paths.

e. Well designed bike storage facilities should be provided at all major trip collectors in Harbor Bay Isle:

(1) Some fenced areas for bicycle storage should be provided at the schools. Bike lockers or secure bike racks should be provided at park and ride lots, at the Shopping Center, at the Community Center, at the HBI Club recreation center, at parks, at swimming pools, and at any subsequent commercial developments.

(2) Bike parking should be as convenient as the closest automobile parking place, and be provided without cost to the cyclist.

De-Emphasizing the Automobile

In addition to the recommendations for a bicycle circulation system described above, the following recommendations to de-emphasize the automobile on Bay Farm Island are made.

1. Public Transit

a. Public transit service should be provided for the clustered single-family residential development.

b. Bus turnouts, comfortable bus stops, and park and ride lots should be located in strategic locations with minimal impact on adjacent residences.

c. A bus by-pass lane should be installed by the developer at the approach to the Island/Doolittle Drive intersection to allow buses to by-pass automobiles at this crowded intersection. This lane should initially be about 200 feet long, depending on traffic conditions at the time it is installed.

d. AC Transit service to new developments should be encouraged to begin promptly as soon as an area is occupied. The City should work with both AC Transit and the developers of Harbor Bay Isle to insure that the necessary information is supplied by home builders to AC Transit in order to facilitate prompt initiation of transit service.

e. The City should work with AC Transit to determine other incentives for transit use on Bay Farm Island which would help establish a pattern of transit use early in the development of Bay Farm Island.

f. Transit service should be increased on weekends to provide transportation to the shoreline open space and to encourage the use of buses rather than cars to visit this area, and to make it possible to live on Bay Farm Island without a car.

g. The City should work with AC Transit to establish direct bus service between Bay Farm Island and downtown Oakland.

2. Car Pooling

A system of car and van pooling should be encouraged.

Naval Air Station and Government Island

Naval Air Station Issues

The Alameda Naval Air Station (NAS) occupies approximately one-third of the main island of Alameda. Its eastern boundary runs south from the Webster Street Tube, behind the College of Alameda, west along Atlantic Avenue and then south along Main Street. Government Island, a Coast Guard Station, is in the Estuary and receives access only via a bridge from Oakland. Both bases are exempt from local land use controls and this plan makes no recommendations about the use of this government land. However, there are a number of other issues related to the use of land in, and adjacent to, both facilities which are important to mention.

The first and most significant issue relates to the on-going speculation about the possible closure of the NAS. While it is difficult to entirely exclude this possibility, the Commander of the NAS has recently given details on the amount of on-going investment in NAS infrastructure.* Given this level of investment and the continued strategic significance of the NAS, it is highly unlikely that the base will close in the near future. However, it is important to know what the procedures would be should the Federal Government ever excess the land. In the event of the NAS closing, the sale of land would be handled by the General Services Administration. They would first offer the land to any other interested federal agencies. If the land were still unused, it would be offered to local public agencies, with the City of Alameda given priority. However, the final decision would be dependent upon the acceptability of the City's plan for the land. It is therefore important that the City be fully prepared in the event that all or part of this property is ever excessed by the Federal Government.**

There are a number of pieces of private land within the boundaries of the NAS. These include two five-acre parcels currently zoned R-4, as well as land owned by the Southern Pacific Railroad. These parcels are adjacent to an area of Naval housing. All this land falls within Airport Safety Zone #1 and its use is essentially restricted to open space or warehouse facilities. Adjacent to these parcels is Dale's Bar, situated on Southern Pacific land on the edge of the Airport Safety Zone #1. The existing Bicycle Master Plan indicates one bicycle path extending along Main Street past these vacant parcels and the bar. It would be an enhancement of the plan to integrate this vacant land into the bicycle path system.

Finally, along most of its boundary the NAS is flanked by residential land uses. The NAS has a number of noise generating uses adjacent to the intersection of Main Street and Atlantic Avenue, in addition to automobile noise. The noise from these uses has been considerably reduced in recent years but, according to the City's Noise Element, parts of this area still experience noise levels in excess of 75 dBs. This noise level is considered unacceptable in residential areas. In addition to the issue of noise, the NAS maintains a number of unsightly land uses adjacent to Main Street. The intention is to maintain a band of low-intensity land uses between noise generators and residential areas. Both the noise and the aesthetic problems would be alleviated by a program of berming and landscaping along the periphery of the NAS. This would screen unsightly uses and considerably reduce noise levels in this area.

*Speech given by Captain Robert Worchesek, Commander NAS, before the Alameds Rotary Club.

**_Disposal of Surplus Real Property, For Public and Private Use._ General Services Administration.

Government Island Issues

Government Island was created in the late 1800's as a result of a dredging project intended to give Alameda and Oakland a sheltered, deep-draft port. Its total size is approximately 67 acres. During World War I, the landfill island was leased from the City of Alameda by the Federal government. The Coast Guard's history on Government Island began in 1926. The Coast Guard completed acqusition of the island from the City of Alameda in 1939 for the development of a training center.

Some 3,000 recruits go through the program each year. Extensive recruit training facilities have recently been constructed and more are under construction now (summer, 1977). In addition to its recruit training facilities, the training center is also home for the Reserve Training Schools Branch and the Coast Guard Cutter Resolute.

Government Island is an active base maintained by the United States Coast Guard. Its facilities are presently being expanded, and, like the Naval Air Station, closure is unlikely. In that unlikely event, procedures would be the same as those described earlier for the NAS.*

Recommendations

1. The City should develop contingency plans for the use of the Naval Air Station property and Government Island should it ever be surplussed by the Federal Government.

2. Dale's Bar should be designated as light industrial.

3. The two parcels of vacant land adjacent to Main Street and Singleton should be designated light industrial.

    a. The zoning ordinance should be amended to require all new uses and expansions of or changes to existing uses in an APZ or Airport Safety Zone to be approved only through the use permit procedure in order to provide for conformance with the Airport Safety Element.

4. The City and the NAS should work together on the development of a comprehensive plan for the improvement of the periphery of the Naval Air Station. This scheme should include landscaping and berming to both screen unsightly uses and reduce noise levels.

*Paul Mobley, Public Affairs Specialist, Public Affairs Office, Coast Guard Training Center, Government Island, Alameda, California, July 1977.

ENVIRONMENTAL IMPACT ANALYSIS

Environmental Impact Analysis

Summary

The potential effects the Combined Land Use Plan of the Alameda General Plan would have on the natural and social environment of Alameda are analyzed in this Environmental Impact Report.

A General Plan is by definition an overview addressed to longterm goals. In reponse to this, the broad impacts of the Combined Land Use Plan of the General Plan are assessed.

Implementation of the recommendations would add 10,500 to 11,500 people in 4,700 to 5,000 dwelling units, develop most of the remaining open space in the city, reclassify the land use designations, and develop new traffic circulation routes in the City (fig. 34, p. 162). by means of Patton Way, Atlantic Avenue Extension, Fernside Extension, and improvements on Mariner Square Loop and Mariner Square Drive.

The following impacts would also be exerted:

Open Space

1. Increased recreational development of open space;
2. New public access and improvement to the City shoreline;
3. New landscaping on streets and adjacent to Patton Way and Atlantic Avenue Extension;
4. Development of remaining vacant land.

Land Use

1. Restriction of nonresidential uses in residential areas;
2. Some increase in the choice of housing types;
3. Reconstruction of existing multi-family structures;
4. Mixed uses at specified sites (Ballena Bay; Estuary);
5. Medium density development on specific vacant sites designated for medium density or mixed-use;
6. Promotion of the City's residential architectural heritage;
7. Conversion of large older houses into more than one unit without destroying the exterior form;
8. Reclassification of several residential designations to two main residential densities to allow 8.7 units per net acre for Single-Family, and 21.75 dwelling units per net acre for Medium Density;

9. Realign boundaries of commercial and industrial zones;
10. Possible relocation of several houses and occupants for small expansion of Buena Vista Park;
11. Possible destruction of the nesting area of the Least Tern, an endangered species;
12. Possible increase in urban water runoff;
13. Potential contribution of pollutants to poor water quality in San Leandro Channel and the Estuary.

Circulation

1. Improved traffic circulation within the City, including Main and Bay Farm Islands;
2. Reduction of traffic on residential streets (except Fernside and possible portions of Grand and Sherman);
3. Increased traffic-generated noise and exhaust emissions, particularly on Fernside;
4. Enhanced appearance of some street and roadways through tree planting and landscaping;
5. Increased use of public transit;
6. Controlled access to Main Island;
7. Improved bicycle paths;
8. Increased off-street parking in commercial areas of the city;
9. Further studies to provide the City with additional information for better traffic control.

The Combined Land Use Plan is a planning document that recommends steps to improve the environment of Alameda and addresses the probable impacts that could result if the recommendations were fully implemented. Several potentially adverse impacts could ensue, and measures to mitigate these possibilities are incorporated into the Plan

Alternatives discussed in this report include the No-Plan alternative or maintaining the existing conditions in the City, two option plans for development on Harbor Bay Isle, and three types of circulation changes to the East End.

Introduction

This Environmental Impact Report contains analyses of the probable impacts that could ensue if the recommendations in the Combined Land Use Plan of the Alameda General Plan were fully implemented during the next twenty years.

The General Plan by nature is a planning document, and environmental impact evaluation was a continuing process in the preparation of the recommendations, principles, and policies. The environmental analyses in these reports reflect a broader scope than do analyses performed for specific projects with specific defined limits.

The EIR is designed to be read concurrently with the other sections of the Combined Land Use Plan. The Context (pages 3-22), General Land Use Issues (pages 31-56), General Open Space Issues (pages 57-74), and General Circulation Issues (pages 75-92), provide the background and setting descriptions for the EIR. The relationship of the General Plan to the City of Alameda and regional goals and policies is discussed on pages 23-26. Figures, tables, and graphs cited in the EIR are contained in the Plan with cross references.

Mitigation Measures

The Combined Land Use Plan reflects the planning principles developed to meet the goals and objectives of the changing City. In the process of preparing the Plan, measures to mitigate potentially adverse impacts were incorporated as actual recommendations. Several adverse impacts would be exerted if the Plan were implemented. The Plan considers these impacts and suggests various studies and continuing measures to monitor the extent of the impacts and develop new means for mitigation.

Geology, Soils, and Seismic Conditions

Available geologic evidence indicates that Alameda is geologically stable; no evidence of active faults beneath the area has been found.

The sand fill on the Harbor Bay Isle area of Bay Farm Island has been compacted by heavy machinery; however, settlement is possible where sand fill has been recently removed. The development plans for Harbor Bay Isle (and possible parts of the Estuary) call for digging lagoons and grading residential areas. These activities could induce settlement, which could affect buildings, paved surfaces, and utility conduits.

Some parts of Alameda, especially in Harbor Bay Isle, may be subject to liquefaction,* but only in parts where elevations differ, such as the exterior dike on the southeasterly edge of the Harbor Bay Isle development, and along the banks of the proposed lagoons.**

Tsunamis (earthquake-generated tidal waves) may present a potential danger to some parts of the Alameda south shoreline, and Bay Farm Island (fig. 6, p. 25); however, the perimeter dike of the proposed Harbor Bay Isle development should provide adequate 200-year interval protection.

The City's Seismic Safety Element indicates that all of Alameda lies within seismic zones that preclude many type of development unless additional study of the area is made prior to formulation of specific development plans, and appropriate measures are taken to mitigate seismic hazards.

The two major vacant areas in the City proposed for residential development, the Pan America Industries property in the Estuary and Harbor Bay Isle, have been classified as "generally unsuitable for development without appropriate mitigation measures" for land uses categorized as "critical facilities" (e.g., schools, local gas and electric lines, pipelines, public assembly buildings with a capacity of 100 or more, fire stations). Any development within the seismic zones must have a detailed site investigation report, and must conform to the Revised Uniform Building Code earthquake regulations.***

The Harbor Bay Isle development sponsors have evolved specific measures for grading, treatment of channel areas, slopes (especially adjacent to lagoons), building foundations, slab-on-grade construction, structures, drainage, and provision of utilities in the approved portions of Villages I and II.

*The transformation of granular material from a solid state into a liquefied state as a consequence of increased stress, often the result of energy released by earthquakes.

**Arthur D. Little, Inc., *EIR Harbor Bay Isle* (1973), p. IV-193.

***City of Alameda, *Seismic Safety Element,* prepared by Envicom Corp., (1976), p. 30.

Drainage and Water Quality

Full implementation of the Combined Plan's recommendations could increase pollutant levels in the Estuary and the San Leandro Channel through surface runoff from new projects and discharge from the proposed lagoons in Harbor Bay Isle and possibly the Pan America Industries property on the Estuary. The extent to which runoff and discharges would affect the water quality cannot be determined at this time.

At present, the water quality of the San Leandro Channel and the Estuary is poor. On the west side of Bay Farm Island, the Bay's water quality is considered moderate. The quality of runoff water within urbanized areas is generally poor. Drainage of the currently vacant areas after full development will add to the effects of urban surface runoff by creating impervious surfaces.

Drainage in Harbor Bay Isle would be controlled by a system of lagoons and drainage ditches. A lagoon system passing through Villages I, II, and V would provide most of the necessary interior drainage. The project sponsors propose to maintain the lagoon water level at mean sea level, taking in higher quality water from the Bay and discharging water into the San Leandro Channel, thereby maintaining an acceptable level of water quality in the lagoons.

During construction, the water quality of the Harbor Bay Isle lagoons would probably be impaired because of the length of time involved in developing the lagoon circulatory system. The proposed development is expected to take place over an eight-year period. After further study, the actual points of lagoon discharge into the San Leandro Channel could be moved to protect shellfish beds.

Vegetation and Wildlife

Implementation of the proposed recommendations of the Combined Land Use Plan would not affect Alameda's vegetation. In the developed portions of the City, most plants are nonnative ornamental shrubs and trees on residential sites, along the City streets, in parks, and on the Municipal Golf Course. Except for areas along the two farms on Bay Farm Island in active cultivation (about 50 acres), natural vegetation is limited. Common plants found on the golf course, vacant lots, and parks include such grasses as barley and wild oats, several species of thistle, many species of the mustard family, and a wide variety of shrubs.

The vacant areas in the City, primarily Harbor Bay Isle, support little vegetation. The salt marshes and tidelands support productive plant life, such as cordgrass, sea-lettuce, sea moss, and bottom life common to Bay waters.

The Plan recommends extensive landscaping for the proposed street improvements and new residential developments. Many parks are planned in addition to school sites on Harbor Bay Isle, recreation areas, and landscaped strips along the lagoons in Harbor Bay Isle, the City shorelines, and bike paths (see fig. 39, p. 195).

A change in wildlife habitat on vacant areas would result from full implementation of the recommendations of the Plan. Wildlife consists of upland birds and mammals able to exploit habitats extensively modified by human activities. Tidal mudflats are important feeding areas for shorebirds; marshes provide food for waterfowl. Rodents such as field mice, ground squirrels, and jack rabbits are the most typical mammals.

The Least Tern, a waterfowl on the endangered species list, nests each year on Bay Farm Island, primarily on areas in the Harbor Bay Isle development.* Development activity near the nesting area of the Least Tern could disturb the bird's breeding patterns. The Federal Endangered Species Act prohibits any kind of activity that would disrupt such breeding behaviors once they have begun. For the past few years, the Least Tern has used a site on Harbor Bay Isle for breeding during June, July, and August, and would probably continue to use the site in the future. Its breeding habits are so unpredictable, however, that it may be futile to set aside a special sanctuary for its use to allow development of Harbor Bay Isle to proceed.

Construction of the water-control structures on Harbor Bay Isle would have to cease during the mating season of the Least Tern to avoid disturbing this endangered bird. All stages of the development should be coordinated with the U.S. Department of Fish and Game to determine whether and to what extent the Least Tern should be relocated.

Noise

The noise environment of Alameda would be directly affected by implementation of the Combined Land Use Plan. The major noise sources in Alameda are automobile and truck traffic on surface streets and aircraft noise from Alameda Naval Air Station and Oakland Airport.

The Plan contains several recommendations that would result in changes in the existing noise environment of ground sources. The proposed Atlantic Avenue Extension would serve as a major east-west route across town and would alleviate traffic noise along Santa Clara, Encinal, Central, and Buena Vista Avenues, which currently have high noise levels (see fig. 22, p. 82). Noise reductions would probably be on the order of 1 to 2 decibels, but could be more along Buena Vista Avenue if a significant portion of the truck traffic on this road were diverted to Atlantic Avenue. Noise levels in the corridor along Atlantic would increase correspondingly, but land uses along this route are currently industrial and are less sensitive to noise than the residential uses along the other routes.

The Combined Land Use Plan contains recommendations to restrict traffic on residential streets, which would lower residential noise levels while increasing levels along major arterials. These effects cannot be quantified at this time. A net improvement in the noise environment would result, however, since land uses adjacent to major arterials tend to be commercial, with a lower sensitivity to traffic noise than residences.

The Fernside Extension would divert traffic from High Street and possibly Broadway. Noise decreases on these streets would be relatively small. Relatively large increases in noise can be expected along Fernside since traffic levels are currently low.

Recommendations designed to reduce auto dependence, such as encouraging public transit, limiting access to the City, and emphasizing the use of car pools and bicycles, could result in a minor decrease in noise levels throughout Alameda, probably not noticeable.

The Combined Land Use Plan contains criteria for open space buffering, building setbacks, and insulation to reduce exterior and interior noise levels of 65 dB for sensitive land uses such as residences, playgrounds, hospitals, schools, and auditoria. Enforcement of these criteria in the Bay Farm Isle and the Estuary area would result in indirect noise impacts. Several recom-

*Discussion on problems associated with the Least Tern is based on a conversation with Ron Jurek, California Department of Fish and Game, May 7, 1976.

mendations deal with the reduction of residential density to accommodate the existing noise environment. This provides for less sensitive land uses in critical noise areas or takes advantage of anticipated future aircraft noise controls.

Direct impacts would be due to land use and transportation changes brought about through implementation of the Combined Land Use Plan. Development of Harbor Bay Isle and other currently vacant lands would increase the number and extent of noise sources in the study area. Truck traffic generated by the industrial and manufacturing area and residential auto traffic would increase noise levels along roadways, although these increases would be affected by the recommended roadway network modifications described earlier.

Air Quality

Implementation of the Combined Land Use Plan would have direct and indirect impacts on Alameda's air quality. Air quality in Alameda is currently good compared to other parts of the Bay Area. This is due mainly to the relatively constant flow of clean air through the Golden Gate and Alameda's upwind position with respect to major East Bay pollutant sources. Air quality data for Oakland, the monitoring station nearest Alameda, are given in the following table, which shows the number of days in 1976 that the Federal ambient air quality standards were violated.

Air Quality Data

Pollutant	Standard	No. of Days Exceeding Standard
Oxidant	1-hour	6
Carbon monoxide	8-hour	7
Nitrogen dioxide	1-hour	0

Table 14

Oxidant is a secondary pollutant in that it is the result of a chemical reaction in the atmosphere between primary pollutants, which are emitted by autos and other sources. The pattern of oxidant exposure is dictated by summertime winds; levels are lowest near San Francisco and increase to the south and east.

Carbon monoxide is a colorless, odorless, poisonous gas that is emitted primarily by automobiles. Unlike oxidant, carbon monoxide reaches high levels on calm winter and fall days. Its pattern of exposure is closely related to traffic patterns. The highest concentrations occur near dense traffic, and levels drop off rapidly with distance from the roadway.

During construction of certain phases of the Plan, temporary emissions would occur. All construction activities are minor sources of pollution and, because they are temporary, would have little effect on air quality. Nevertheless, the prevailing winds in Alameda could carry airborne dust quite a distance, so that soiling of exposed surfaces downwind of construction would be an occasional nuisance.

Changes in traffic patterns and volumes due to the provisions of the Combined Land Use Plan would directly affect air quality. Several of the recommendations of the Plan, including the Atlantic Avenue and Fernside Extensions, are designed to alleviate congestion. Because

freer-flowing traffic, with decreased idling time, results in lower emission, the total pollutant output of automobiles would be lowered. Locally, however, pollutant concentrations along these corridors would be greatly increased, but would not be likely to exceed the State or Federal standards. Autos also emit higher levels of pollutants when they start. Clustering of uses which allows walking from one destination to the next can contribute to reduce levels.

Recommendations to reduce auto dependence, such as encouraging public transit, limiting access to the city, emphasis on carpools, and implementation of the Bike Route Plan, would result in slightly lowered pollutant levels throughout Alameda.

The major indirect air quality impacts of the Plan are related to the provision for new development at Bay Farm Island, Ballena Bay, and the Estuary. Residential buildings include sources of emissions such as space heaters, fireplaces, and barbecues. The industrial development on Bay Farm Island and the Estuary would probably include some manufacturing processes that would release pollutants. Traffic generated by Harbor Bay Isle and related development would have an indirect but substantial affect on both local and regional air quality. The 31,000 external and 5,000 internal trips that would be generated would increase traffic congestion and pollutant levels along major streets serving the study area. The development would be a major regional trip generator, and emissions from the traffic could degrade air quality in areas to the east and south.

Population Growth and Density

The Combined Land Use Plan, which reinforces the basic impact of Measure A with some modification to Ordinance 1693, would allow for population growth of 10,600 to 11,500 over the 25-year span of the Plan(see Table 15, p. 212) For most of Alameda, the Plan would effectively stabilize population levels, except for minor increases due to conversion of existing single-unit structures to multiple units, and possible construction of new single-family homes and duplexes. The potential for new construction in existing neighborhoods is limited, however, due to limited availability of vacant land. Thus, future potential population for growth in Alameda would be limited mostly to the Pan America and Harbor Bay developments and a total of 1,100 medium density units that would be allowed at selected sites on Main and Bay Farm Islands.

The total number of residential units in new developments that would be allowed by the Plan would be 4,700 to 5,000. Due to the mixed-use designation along the Estuary, however, a specific number of units cannot be determined until development plans are finalized. The estimated number of new units allowed by the Plan would accommodate a population of 10,600 to 11,500.

Assuming that growth remains at the 1970-1975 rate over the time period of this Plan, the population of Alameda can be expected to be about 80,000 by the year 2000, for a growth of about 7,900. By allowing a capacity for growth of about 11,000, the Plan appears to provide adequately for future growth trends of the region as well as the City, despite the extensive zoning reclassification proposed to implement the intent of Measure A over most of the City.

Potential Growth in Alameda Housing Inventory Allowed by Recommendations in the Combined Land Use Plan

Location	Proposed No. of Units	Estimated Population[1]
Harbor Bay Isle Development	3,200	7,300-7,500
Bay Farm Island	500	1,100
Pan American Industries	400-700	900-1,600
Selected sites on Main Island (see Figure v)	600	1,300
Total	4,700-5,000	10,600-11,500

[1]Population estimates are based on 2.4 persons per unit for single-family units and 2.2 for multi-family units (derived from 1970 census data on persons per unit for owner-occupied and renter-occupied units).

Table 15

With future new residential development restricted primarily to the Pan America Industries property, Harbor Bay Isle, and other selected sites, the impact of the Plan on future population distribution in Alameda is self-evident. While population levels would remain about the same in most areas of Alameda, increased concentrations would take place in the West Estuary and Harbor Bay Isle.

Minor increases in density would result from conversion of existing single-unit structures to multiple unit use; otherwise, the net residential density for most of Alameda should remain relatively stable.

New residential uses along the Estuary would develop to a residential density of approximately 17.5 units per gross acre. On Harbor Bay Isle, residential densities would be between 6 and 8.5 units per gross acre for single-family uses and approximately 17.5 units per gross acre for medium density units.

Despite growth in overall population, the Plan would effectively maintain population and density levels in existing neighborhoods, as intended by Measure A. Thus, no perceivable increase in population and density would affect the existing residential areas, with the exception of increased traffic in limited areas of the City. The downzoning that could result from reclassification of most residential areas to special single-family densities would stabilize densities in these areas.

Community Character

Demographic Characteristics

The overall impact on demographic characteristics of Alameda would be determined primarily by the composition of owners and tenants moving into the new developments expected to take place during the time span of the Plan. Most of the units in these developments are expected to be occupied by non-Alameda residents. To the extent that such units are filled by residents of Alameda, and that their previous residences in Alameda are occupied by people with similar demographic characteristics, the impact of new developments on Alameda would be reduced.

With the reclassification of certain zones allowing medium density dwellings at Harbor Bay Isle, Ballena Bay, and large developable lands along the Estuary, residents of these developments can be expected to be younger, have smaller household size, and have lower income levels than would be the case if all the units were single-family. These developments would probably not provide more than a few units of low-income housing, given the character and limited supply of developable land remaining in Alameda.

Developments at Harbor Bay Isle, Ballena Bay, and the Estuary area, with an expected population of about 11,500, would not affect the overall demographic composition to any major extent. Ethnic composition would not be altered significantly, although a tendency to smaller proportions or smaller growth in nonwhite population, especially Black, would result since the nonwhite population is generally at the lower end of the income scale. Due to the high cost of construction, the high degree of amenities, and the lack of any subsidized units at these developments at this time, households at the lower end of the income scale would probably not be represented in the same proportion as the city-wide population. This possibility could be reduced, however, by incorporating subsidized units into the development or, if applicable, utilizing such housing programs as Sections 23 and 8 (rent subsidy programs).

The Plan recommends several sites that could be used for new medium density residential use and possible subsidized housing at a gross density of 17.5 units per acre or higher if approved by an Article XXXIV referendum.* Considering the Alameda Housing Authority plan to redevelop the 282-unit Makassar Strait Village, the Combined Land Use Plan suggests that land is available for more than mere replacement of the demolished units. Concentration of future growth in areas reclassified to allow medium density residences would reinforce the existing downward trend in household size in Alameda.

For the most part, the demographic character of existing neighborhoods in Alameda would not be greatly altered. Since future growth would take place in areas not currently in residential use, the composition of residents moving into these areas would not affect existing neighborhoods, although influences in city-wide demographic characteristics would be expected.

Residential Land Use Character

The Combined Land Use Plan would contribute to stabilizing the residential character of almost all existing residential neighborhoods. With the proposed reclassification of almost all areas zoned for high density residential uses, the Plan would basically reinforce the impact of Measure A. Possible downzoning as a result of reclassification would preserve the historical and single-family character of Alameda's neighborhoods. Apartments already existing in these neighborhoods could be allowed in perpetuity, or could be replaced to a certain extent. Although reclassification of some zones to Special Single-Family could make apartment uses nonconforming, any degree of improvement without increasing density beyond 12.45 units per gross acre would be allowed without eventual threat of demolition, thereby encouraging continued maintenance of structures. Reclassification of zones would encourage the upkeep and rehabilitation of single-family structures in formerly R-4 zones that have been allowed to deteriorate due to the threat of eventual replacement by apartments. The East End and Gold Coast areas now zoned R-1 would maintain their character since existing densities would be continued.

The Combined Land Use Plan recommends new types of density classifications that would allow the conversion of some large homes that can no longer be feasibly supported by a single

*For a discussion of the article XXXIV referendum, see section on expanded housing opportunities, p. . A referendum would also be required for any change to Measure A.

family into several units. This would be permitted, based on a density limit, in the areas designated Special Single-Family on the Proposed Land Use Map. Such conversions, however, would be few in number and would not affect the visual character of any neighborhoods. Due to the expected small number of conversions, such a density limit would have a negligible effect on population density in existing neighborhoods.

Another recommendation would be to permit the construction of multi-family publicly-subsidized apartment units. The Makassar Strait Village (282 units) is planned for redevelopment by the Alameda Housing Authority. The Plan proposes that the Parrot Street and Eagle Avenue sites be permitted to redevelop at, or close to, their existing density levels. This will permit the retention of these low-cost units, which it would be impossible to replace elsewhere in the community.

The Webster Street site holds 120 units, and the Plan recommends that this area or portions of it, be reserved as open space. The Plan proposed two ways to both scatter these low-cost units through the community and to maintain the stock of houses affordable by low and moderate-income people. First, the Plan seeks to facilitate the development of moderate-cost units on those sites designated for medium density. In conjunction with various State or Federal subsidies, some of these sites could provide low and moderate-cost housing. And second, the Plan emphasizes the use of rent subsidy programs which can be applied to tenants in existing rental units. These strategies will enable Alameda to replace the units lost by demolition or rehabilitation, and add to the existing stock of low and moderate-cost housing. As noted in the Plan, these strategies are founded upon the continued availability of various forms of State and Federal assistance.

The most noticeable recommendations for housing density in the Plan are proposed for the remaining large parcels of undeveloped land in Alameda: Harbor Bay Isle and properties along the Estuary and Ballena Bay. The Plan would encourage more compact development patterns and medium density residences in these areas. A sprawling type of single-family development for all these sites would not be a optimum use of the land, which represents the major developable parcels in Alameda and the last place where extensive undeveloped shoreline areas exist. The Combined Land Use Plan encourages mixed residential densities of the land with densities ranging from 6 to 21.75 units per acre, which could avoid a spread development and allow for more shoreline open space. A greater selection of different types of residences provides more benefits to the community as a whole than single-family subdivision, especially in a limited land context. A greater range of housing opportunities with variety in housing types, sizes, and prices would be created, providing housing for a wider range of population.

Open space could be made available to the public, as opposed to individualized open spaces. A more compact development would be more conducive to use of public transportation and to more pedestrian-oriented neighborhoods. Costs of improvements and community services would be less for mixed compact developments relative to single-family areas (see discussion in Economics Section).

The residential character of new developments along the Estuary (Pan America Industries property) would be different from most other residential uses now available in Alameda due to their mixed commercial and office uses.

Mixed uses would enable people to live and work in the same development, creating greater neighborhood identity and reducing commuting since residents would have the opportunity to walk to work. To the extent that residents were actually employed within the project, such benefits would take place in new developments proposed along the Estuary.

Use of varied densities would enable preservation of more open space along the Estuary, thereby enabling increased public access to the waterways. Medium density residential would be much more consistent with these areas than single-family development, especially with the significant role that commercial uses would play in the economic viability of these sites. Compact development with surrounding open space would also provide a more attractive image than complete coverage by single-family units.

Since the developments along the Estuary would be located in existing industrial areas, their densities would not directly affect the residential character of surrounding neighborhoods. The uses bordering adjoining neighborhoods would be similar to present uses.

The reclassification of residential densities could be a significant aid in preserving houses of historic significance. By permitting owners of large old houses, which constitute a major part of Alameda's architectural heritage, to construct more than one unit without changing the exterior of the building, the historical integrity could be preserved as the building becomes more economically viable.

The proposed reduction in commercial and industrial zoning in developed areas would reduce the deterioration of nonconforming residences in these zones. With overzoning for these uses, the proposal would encourage continued maintenance of residential uses in neighborhoods surrounding existing commercial and industrial uses.

Open Space Character

The Combined Land Use Plan would increase the availability of regional open space and would greatly improve public access and use of Alameda's shoreline and waterways. Specific proposals are made for the neighborhood open space (see Open Space Recommendations for specific planning areas), in which the City is most deficient. Since the limited availability of opportunities for development of neighborhood-and community-scale open spaces exists due to the restricted supply of vacant land, the Combined Land Use Plan also focuses attention on preserving open space options available in the last remaining large vacant areas, especially along the shoreline. Such an approach attempts to preserve the open space options still remaining in this almost fully developed City. This would represent an important conservation measure, since very limited open space resources remain to be tapped in the East Bay.

The Plan also establishes a policy of placing a high priority on developing new open spaces in currently deficient areas as vacant land becomes available. A variety of open spaces, from mini-parks to large recreational facilities, are recommended for such areas.

Emphasis on shoreline open space and access would create a unique resource for Alameda as well as the entire Bay Area. Bay Farm Island represents one of the few remaining opportunities for long continuous shoreline open space, especially since the East Bay is deficient in shoreline open space.

The proposed waterfront open space along the Estuary would enhance the character of land uses in Alameda and thus would stimulate the commercial activities proposed in the area. The development of a major commercial center with regional attraction would depend on the unique character provided by the Estuary. The open space along the waterfront could greatly enhance the creation of such a center.

The proposed open space along the northern part of Webster Street would improve the visual quality in the area of the Tubes, providing an aesthetic gateway to the City.

When Makassar Strait Village is redeveloped, the remaining open space will provide park space to residents in the Northside, West End, and new Estuary development. The new Buena Vista Park is also available to Northside residents.

People moving to new development areas of Alameda (e.g., Ballena Bay, Harbor Bay Isle, and the Estuary) would benefit from the shoreline and regional open space proposals as well as from proposed improvements in open space requirements for individual parcels. As indicated earlier, most of the people moving into the new developments would probably not be existing Alameda residents, and the developments would probably not provide significant housing opportunity for lower-income households.

Character of Commercial Uses

The Combined Land Use Plan would alleviate the existing problem of overzoning for commercial uses and the incompatible mixture of commercial and manufacturing uses prevalent along parts of Webster and Park Streets. Reduction in general commercial zoned areas to conform with existing commercial uses is consistent with the reclassification of residential uses, which would help stabilize the neighborhoods. All new commercial designations are located in areas where new residential developments would take place. General commercial use is proposed on Bay Farm Island on a site convenient to both the Harbor Bay Isle project and existing neighborhoods. This area now lacks sufficient commercial facilities.

All other proposed new commercial uses are part of mixed-use designations located at Ballena Bay or along the Estuary. The character of these commercial activities would differ from all present commercial uses. The mixed commercial/office/residential designations along the Estuary and at Ballena Bay are all water-related and have marinas associated with them. Developments along the Estuary would alter the vacant, unsightly character of existing uses and could transform the area into a scenic and economic asset to the City. In order to successfully establish large commercial activities in this area, such development would probably need to be large in scale and unique in character to attract a regional market. The waterfront character could provide the basis for creating a unique commercial environment.

Recreation/commercial uses are proposed for Harbor Bay Isle. These would also provide water-oriented commercial uses. The Combined Land Use Plan also addresses the control of strip commercial development along the South Shore Center. Further development fronting directly onto streets is discouraged, and commercial development will have less impact on the visual appearance of the area.

Character of Industrial Land Use

With the exception of existing industrial activities, the Combined Land Use Plan would shift the majority of industrial land uses in Alameda from the Estuary area to the southern undeveloped part of Bay Farm Island. Only the areas currently in heavy industrial uses along the Estuary are designated for heavy industrial uses; the 320 acres of new industrial land would be for light industrial activites. This is consistent with the regional trend, which indicates that demands for heavy manufacturing sites are decreasing. Since the area on Bay Farm Island is subjected to aircraft noise from Oakland International Airport, it would be inappropriate for residential uses. A separate industrial road would serve the area to avoid conflict with residential neighborhoods. A buffer is also provided between the industrial area and the existing community of Bay Farm Island.

Although it is questionable whether there is enough demand for industrial land in the Bay Area to consume the area designated for such use at Bay Farm Island, its location would be appropriate for any such future use in Alameda.

Housing Availability

The Combined Land Use Plan's recommendation that would affect availability and cost of housing would be the reclassification of most of residential Alameda to Single-Family and Special Single-Family residential and the few remaining areas to Special Multi-Family and medium density, which would allow a variety of residential housing types in new developments on Harbor Bay Isle, along the Estuary, at Ballena Bay, and at the other sites listed on page . As indicated earlier, these areas would allow construction of about 4,700 to 5,000 units during the time span of the Plan, mostly in single-family residences. Given regional and city growth trends, this appears more than sufficient to accommodate future growth during the period. Availability of housing for lower-income households in Alameda, however, would probably become increasingly restrictive without sufficient public subsidies.

The reclassification would disrupt the normal filtering process of the housing market. This process provides housing for lower-income households as units age and households in higher-income categories move on to newer housing alternatives. Such a filtering process, where units are passed from one income level to another as they age, traditionally provides housing for households on the lower end of the income scale. The zoning reclassification would interfere with this sequence by retarding the aging process, since improved maintenance and rehabilitation would be encouraged. The change in zoning would improve the character of the residential areas and, thus, would maintain or increase their value, making them less available to lower-income households.

Except for the sites recommended for medium density housing, which could be used for subsidized housing, increases in the housing stock resulting from the developments at Harbor Bay Isle, the Estuary area, and Ballena Bay would not significantly increase availability of housing for lower-income households unless subsidized units would be able to be incorporated into the development. At present construction costs, even multi-unit structures would not provide affordable housing for low and even moderate-income households unless subsidized.

It should be pointed out that reclassification in these areas to allow multi-unit residences would have a favorable effect by providing housing opportunity for a much wider range of households, in terms of income, as opposed to developing all single/duplex units, as would be the case under present application of Measure A. While the Plan allocates land for housing, it is not specific about the housing needs of those who cannot participate in the housing market without subsidies. This can be addressed in future reviews of the Housing Element.

Availability of Developable Land

With the realization of the Combined Land Use Plan, almost all vacant land in Alameda would be developed or preserved for open space and/or parks. Further development would be possible if some existing land uses, such as the remaining industrial activities along the Estuary, were discontinued, enabling alternative uses. Possible renewal and/or increased densities would be the only means by which additional growth could take place in existing residential areas; however, this would probably not happen during the effective time period of this Plan. Additional landfill could provide new developable land, but with the tight control of landfills by BCDC, this is not expected.

Economic Considerations

Tax Base

The proposed land use reclassifications would have several impacts on the tax base. For parts of the City currently zoned R-2 through R-5, the Combined Land Use Plan recommends redefining to densities not exceeding 21.75 dwelling units per net acre and, in some locations, to a maximum of 10 units per net acre. To the extent that present property valuations reflect the development potential of parcels, the tax base would eventually be reduced, since the development potential of some of these areas would be diminished. This might be partially offset by inflation. Under present zoning, residential density equivalent to R-2 conceivably could continue; future development of these areas without Measure A might increase the property valuation of the City. The reclassification of R-2 through R-5 to a lower density could possibly result in less valuation of the property; however, the difference in property value would probably be insignificant.

The possible reduction in the tax base resulting from the reclassification could be counterbalanced to the extent that implementating of the proposals would improve the quality and maintenance of currently deteriorating neighborhoods.

Encouraging development of remaining vacant land would provide economic and other benefits to the City. New construction could provide a substantial proportion of increased property valuation.

Development of Harbor Bay Isle, the largest vacant area remaining in Alameda, would contribute significantly to the City's tax base. The 320 acres of industrial improvements can be expected to generate a total assessed valuation of about $19.5 million, based on estimated valuations per acre for the developer's original proposal (Arthur D. Little 1973). This estimate is considered conservative relative to other industrial uses in the Bay Area. Based on Arthur D. Little's estimate of assessed valuation for commercial uses, about $117,000 of assessed value would be generated for every acre of commercial use on Harbor Bay Isle.

Since 3,200 units are planned for Harbor Bay Isle, residential development would add substantially to Alameda's tax base. The remaining open space on Harbor Bay Isle would not impose a financial burden on the City if it could be turned over to the East Bay Regional Park District.

The proposed land uses along the Estuary would have a positive effect on Alameda's tax base. The recommendations allowing multiple-unit structures in this area would enhance this impact on the tax base without sacrificing the measure's intent. Greater intensity of development in this area would generate greater increases in assessed value than could be generated from all single-family development. Increases in commercial and office spaces along the Estuary would considerably increase future property tax revenues to the City. The replacement of unused industrial land containing no improvements or structures of little value could only enhance the City's financial position.

The mixed-use designation at Ballena Bay would also have a positive impact on the City's tax base. Reclassification of zones at this site would also benefit the tax base without conflicting directly with existing single-family neighborhoods. Development of only single-family and duplex units would be incompatible on a narrow strip of land surrounding a marina and where adjoining residential areas are developed at more than 25 units per acre. The mixture of commercial uses with the residences would improve the revenue-generating ability of the City's property tax.

The above impacts on the City's property tax base would also affect the revenue-generating ability of the Alameda Unified School District from property assessments.

Cost of Government and School District Services

The two major development areas in Alameda should benefit the City's financial position. The residential use in Harbor Bay Isle and the increase in commercial and office uses proposed along the Estuary on unused land should result in a greater increase in property and sales tax revenues than the increase in public costs to serve these new developments.

Harbor Bay Isle now generates little revenue to the City. Property taxes from the proposed residential use alone could generate over two million dollars annually (Wainwright and Ramsey, Inc. 1975). The increased demand for municipal services such as the new fire station, street maintenance, etc., would cost in the area of a million dollars, leaving a balance of nearly one million to the City. The operating expense of three new schools could be met by the revenue from property tax, also with a surplus of nearly a million dollars. The financial impact of any residential development could be changed in the future, depending on how the California Legislature decides to implement the Serrano-Priest decision, (18 D.3d 728; Dec. 30, 1976).

The Combined Land Use Plan encourages economic uses of large proportions of remaining unused land in Alameda that would generate income for the City but would not make equivalent demands for services.

The proposed recommendations allowing mixed residential uses in parts of the new development areas would benefit the City's financial position. The savings that can accrue to municipalities from encouraging compact higher density developments, as opposed to single-family sprawl developments, have been extensively documented in recent years.

In a study conducted by Real Estate Research Corporation for the Council On Environmental Quality, savings in capital and operating costs were found to accrue from developing at higher than single-family densities (Real Estate Corporation 1974). Table 16 summarizes the findings of the study relative to neighborhood-scale developments with 1,000 units of either all single-family residences (A), all walk-up apartments (B), or a mixture of housing types (C). The results indicate that savings to both the developer and the City would be possible through mixed residential uses. Under capital costs, it is evident that the developer would be faced with lower site improvement costs (streets, roads, and utilities). This analysis provides a basis to help review the alternatives to the Plan discussed later.

Capital and operating expenditures for open space and recreation represent the only cost that would be higher for higher density developments. One advantage of such developments is the provision of more open space. Although open space is more expensive per unit for higher densities, its cost per unit is significantly smaller than other public costs. On Harbor Bay Isle, open space could be dedicated to the East Bay Regional Park District and thus would not make direct fiscal demands on the City of Alameda. Due to the increased economic value provided to the Pan America Industries property by allowing medium density residential uses, the owner would be required to develop and maintain the shoreline open spaces. Such open space would significantly benefit the commercial uses on the property as well as providing opportunity for public use.

Single-family developments generally create a greater demand for schools than medium and higher density developments. This is illustrated by the study: capital and operating costs per

unit for a mixed housing development were found to be about 85 percent corresponding costs for a totally single-family development.

Costs of maintaining streets and roads were found in the study to be significantly lower (about half) for a mixed development than for a single-family neighborhood.

Estimate of Capital and Operating Costs for a Neighborhood of 1000 Units

	A Single-Family Cost/Unit	B Walk-Up Apartment Cost	B % of A	C Housing Mix[2] Cost	C % of A
Capital costs					
Open space/recreation	220	252	115	245	111
Schools	5,354	4,538	85	4,538	85
Streets/roads	3,080	1,464	48	2,064	67
Utilities	5,483	1,579	29	2,782	51
Total	14,137	7,833	55%	9,629	68%
Operating costs					
Open space/recreation	30	41	137	37	123
Schools	1,168	989	85	989	85
Streets/roads	37	11	30	19	51
Utilities	484	278	57	365	75
Total	1,721	1,319	77%	1,410	82%

[1]Excluding cost of land and construction in capital costs.

[2]Housing mix: 20 percent each of single-family, single-family cluster, townhouse cluster, walk-up apartment, and high-rise apartment.

Source: Real Estate Research Corporation 1974, pp. 14-15.

Table 16

Areas developed at medium and higher density would thus generate less demand for schools and municipal services than single-family development. In both cases, however, the City would receive tax revenues exceeding the cost of providing public facilities and services. It should be noted that this analysis uses some housing types that may result in densities higher than those proposed by the Plan.

Employment Base and Consumer Expenditures

The Combined Land Use Plan allows for an increase of about 5,000 units throughout the City, assuming no increase in the number of units in existing neighborhoods. Such an increase, along with the potential growth in commercial, office, and industrial uses, would generate many construction jobs in Alameda. The number of units constructed in 1975 was only 125. Assuming even distribution of construction over the 25-year period, about 200 units per year would be built beyond construction activities in existing neighborhoods.

In addition to increasing the labor force living in Alameda (see Table 15, p. 212), the number of jobs available in the City would be increased by new commercial and industrial activities along the Estuary, at Ballena Bay, and at Harbor Bay Isle (compare to Table 5, p. 77 which shows current conditions). Concentration of jobs in Alameda can be expected to shift, with the Estuary and Harbor Bay Isle areas capturing an increasing proportion. Much of the increased

job opportunity would be in commercial, office, and light industrial activities, thus a growth in sales, clerical, and manufacturing jobs could be expected. It would be difficult to determine whether new jobs in Alameda would be filled by Alameda residents; most new developments would incorporate mixed uses, which would provide the opportunity for people to live and work in the same development.

The use of the Estuary to create commercial uses attracting a regional market would increase Alameda's share of retail trade activity in the region. Per capita retail sales in Alameda were only $858 in 1971, compared with $1,501 for Alameda County and $1,596 for the nine Bay Area counties (Arthur D. Little 1973). Increased retail activities would also generate increased sales tax revenues for the City.

Increased construction and employment opportunities would create additional income to various sectors of the economy and increased disposable income. Although increased consumption would directly benefit Alameda to some extent, such benefits would be limited to the regional character of employment and consumption activities.

Financial Feasibility of Specific Proposals

Table 17 lists the City and Alameda Unified School District capital improvement projects proposed in the Combined Land Use Plan. The range of costs shown on the table are very preliminary estimates. Transportation improvement costs are expected to range from $2.5 to $3.5 million, excluding the 83 percent Federal assistance that would be received for the Patton Way Extension project, which is estimated to cost $3 million. These figures could also overestimate actual cost to the City, since joint funding may be available for other projects. The industrial road on Harbor Bay Isle would be provided by the developer.

Developing open space, improving shoreline access, and upgrading existing parks could cost about $1.5 million. Several specific open space proposals would be provided either by developers or by another agency. The Plan calls for a tree planting program along selected streets in Alameda and the development of mini-parks and other recreational facilities whenever appropriate sites can be secured. These improvements would require capital expenditure. Capital costs for a mini-park or neighborhood playground may be in the vicinity of $10,000-$25,000.* Costs for such facilities would vary with the types of improvements.

With significant new development expected at Harbor Bay Isle, an additional fire station is expected. Capital costs for such a facility may be around $315,000.

The total capital improvement costs that can be expected to be spent by the City would thus be about $4.2 to $5.6 million. At a 25-year effective period of the Plan, capital improvement costs would average $170,000 to $225,000 per year. This is 47 to 62 percent of the $365,000 in total capital expenditures spent by the City in fiscal 1974-75.

Some of these past capital costs have been supplemented by Federal and State funds. Without these outside sources, the City's ability to support capital improvement projects would be greatly reduced.

Capital expenditures that would accrue to the Unified School District would range from $6 to $7 million to serve the Harbor Bay Isle development. Over a 25-year period, an annual capital cost of about $240,000 to $280,000 would result.

*The Albany Parks and Recreation General Plan (1970) estimated the cost of a neighborhood playlot at $21,000, which includes 20 percent for inflation and contingency.

Estimated Capital Improvement Costs for Projects Proposed by Combined Land Use Plan

Types of Improvements	Estimated Cost Range
Transportation projects Mariner Square Loop Patton Way[1] Atlantic Avenue Extension Fernside extension City Line Drive Highlands Loop road Island Drive improvements	$2.5-$3.5 million
Open space projects Webster Street Tube area (18 acres) Shoreline access Four mini-parks Landscaping (street trees)	$1,400,000-$1,700,000
Existing park improvements Paden School Kaliski property Rittler park Woodstock park	
Fire station (1)	$300,000-$375,000
City total	$4.2-$5.6 million
Schools (3): Alameda Unified School District	$6-7 million

[1]83 percent of estimated $3 million construction costs for project would be Federally funded.

Table 17

Transportation and Traffic Circulation

Full implementation of the recommendations set forth in the Circulation Section of the Combined Land Use Plan would have the following impacts:

- improved traffic circulation within the City, including Main and Bay Farm Islands;
- some reduction of traffic on some residential streets;
- enhancing the appearance of some streets and roadways through landscaping;
- an increase in the use of public transit;
- limiting access to the Main Island;
- improving the use of bicycle paths;
- increasing off-street parking in commercial areas of the city;
- assist the City in continued planning for traffic control.

Atlantic Avenue Extension

The recommended Atlantic Avenue Extension (see fig. 34, p. 162) will provide a major east-west route for traffic that now uses residential streets (see fig. 20, p. 80), especially Buena Vista, currently designated as a truck route. The extension will allow traffic west of Webster Street to cross Webster directly without using other streets, avoiding congestion. The new Patton Way will also tie into the Atlantic Avenue Extension to provide easy access to truck and auto traffic destined for central and east Alameda or leaving the city via the Posey Tubes. New development in the Estuary area will be expected to utilize the Atlantic Avenue Extension for egress and ingress at the southern portion of the development.

As shown in figures 26 and 34, the proposed extension has two possible routes between Sherman and Grand Streets. The northern route would have fewer impacts on existing residential streets and provide more efficient traffic flow; however, such a route would entail purchasing right-of-ways and separating the industrial operations of Del Monte (California Packing Company) and Weyerhauser in order to construct a new street.

The southern route would utilize existing streets, Sherman, Buena Vista and Grand, but the additional turns could cause congestion and continued use of residential streets. Moreover, traffic east of Grand Street could continue to use Buena Vista Avenue rather than turning on Grand Street and traveling on Clement. Peak-hour traffic could also spill over to Lincoln Avenue and other residential streets if traffic controls were not implemented to direct traffic onto the Atlantic Extension. Possible conflicts may result from increased traffic on Clement Avenue encountering trucks maneuvering to load and unload in the industrial sections; however, these are expected to be minor. A problem may result for trucks turning from Park Street onto Clement (west) since it will be difficult to construct an adequate truck turning radius at that location.

Patton Way

Prior to the preparation of the Combined Land Use Plan, plans had been developed for Patton Way and possible funding for 80 percent of construction costs had been identified. The Combined Land Use Plan recommends implementation of Patton Way as a top priority and suggests a connection to the proposed Atlantic Avenue Extension.

When Patton Way is completed, traffic impacts on Webster Street will decrease and circulation will improve from the Posey Tubes to areas outside of the Webster Street commercial area. Residential streets adjacent to Patton Way such as Pacific, Eagle, and Haight may experience reduced traffic levels. Eighth Street between Lincoln and Central will have an increased volume of traffic with associated rise in noise and air pollution levels. Recommended landscaping along Patton Way, particularly in the Makassar Village area, will help to mitigate the impacts by serving as a buffer between the roadway and adjacent open space and residences.

Mariner Square Loop

The road passing immediately behind the entrance to the Tubes will be widened and realigned to allow efficient traffic circulation to the Naval Supply Center, Mariner Square, and proposed development in the Estuary area east of Webster Street. The improvements on this road would also contribute to the improved traffic flow on Webster by diverting traffic destined for the Naval Supply Center or the Estuary.

Mariner Square Drive

Mariner Square Drive would serve property along the Estuary known as Mariner Square. The Combined Land Use Plan suggests that the access between the Drive and Mariner Square be constructed with appropriate landscaping and surfacing to convey a "parkway-like" appearance. An access of this type would facilitate traffic movement to and from Mariner Square and enhance the appearance of the transportation network around the entrance to Alameda.

Fernside Drive Extension

The circulation issues relating to the problems of traffic in the East End are discussed in the Combined Land Use Plan.

Although Fernside will be transformed from a quiet residential street to a thoroughfare with traffic-generated noise and vehicle emissions, High Street will have less traffic, and traffic flow in the East End will be improved with less total impact in the area rather than all impacts concentrated on one street.

Traffic levels on Fernside and High Street would, however, exceed the preferred levels (1,000 ADT) for residential streets in Alameda.

Bay Farm Island

Full implementation of the recommendations in the Combined Land Use Plan would include the 3,200 dwelling units, 40 acres of commercial uses, and 300 acres of industrial uses on Harbor Bay Isle and approximately 550 additional dwelling units on the rest of Bay Farm Island. These new developments would generate some 31,000 daily trips outside Bay Farm Island and 13,000 internal trips within Bay Farm Island.

A new transportation network on Bay Farm Island must be developed to serve this increased traffic. The Combined element makes several recommendations to increase the capacity of the existing transportation routes* (see fig. 40, p. 196):

1. Widening Mecartney Road from Fontana Drive to its existing terminus and extending it to the western tip of the Harbor Bay Isle property;
2. Extending Street C-Bridgeway Road from the western border of Village V to the extension of Catalina Avenue;
3. Extending Catalina Avenue from Fontana Drive to the shoreline park and from Leeward Lane eastward to City Line Road.

An application has been made to the Federal government by the City of Alameda for funding under the Economic Development Act to construct two lanes of City Line Road, a future four-lane arterial from Doolittle Drive along the Oakland-Alameda border to the proposed industrial area to the Harbor Bay Isle Development. City Line Road would carry all truck traffic associated with industrial development on Bay Farm Island.

The development of Harbor Bay Isle will fill Bay Farm Island Bridge to capacity. City surveys have shown that only a minor amount of traffic over Bay Farm Island Bridge is through traffic (traffic destined outside Alameda). If the majority of trips generated by the new developments on Bay Farm Island are destined outside the City of Alameda, alternative routes can be taken on Doolittle Drive and Hegenberger Road. Trips ending on the Main Island from Bay Farm Island will probably fill Bay Farm Island Bridge regardless of the volume of traffic routed on Doolittle Drive.

Traffic on Residential Streets

Fig. 20, which shows the volume of traffic on the City's streets, indicates how few streets have traffic volumes lower than 1,000 vehicles per day. Efforts to reduce traffic on residential streets in Alameda by discouraging auto use, encouraging use of alternative transportation (transit), discouraging the widening of residential streets, and providing new access routes to the City will contribute to minimizing traffic impacts. Such types of traffic disincentives as diverters, barriers, semi-dividers, traffic circles, and chokers installed in the residential sections of the City would diminish the effect of traffic in residential neighborhoods, particularly in the Central, Gold Coast, South Central, Northside, West End, and East End sections.

*These roads are also part of the Harbor Bay Isle Development Plan.

A disadvantage of such disincentive devices is that they may be regarded as a nuisance by some residents as well as by drivers of emergency vehicles and commercial vehicles making local deliveries, because the devices force a diversion in the drivers' intended straight-line route.

The proposed Atlantic Avenue Extension, Fernside Extension, and Patton Way will help minimize truck traffic on residential streets. Further measures, such as the traffic controls indicated above and special ordinances for restriction of truck traffic, could also help divert traffic from residential streets.

Transit

Proposals in the Combined Land Use Plan to encourage use of public transit and institute disincentives to private vehicle travel would place a greater demand for services on AC Transit, both within the City and to BART and other parts of the Bay Area. Although increased use of public transit would be expected to result if the recommendations of the Element were implemented, further dependence on AC Transit to discourage auto travel must be reviewed realistically in light of the current operating deficit of the transit district; large increases in routes and numbers of carriers are unlikely. Services such as a shuttle from the BART stations in Oakland to the Airport (which might service parts of Alameda) may be expected to develop in the immediate future.

AC Transit currently has a deficit operating budget, and further demand for services without a corresponding increase in public support will continue to aggravate its encumbered financial conditions.

Access to Alameda

The five access points to Alameda (six if the Tubes are considered as two separate points) have little excess capacity except for Miller-Sweeney Bridge. New development on the Main Island is restricted by the amount of traffic generated that may travel via the access routes. The Combined Land Use Plan stresses the importance of limiting the capacity of the four bridges and the Tubes to prevent further impact on the circulation system of the City. The possibility of utilizing the extra capacity on Miller-Sweeney Bridge should be addressed by the City since greater congestion on all access points will continue.

Bicycle Circulation

The Combined Land Use Plan recommends the increased use of bicycles and specifies several areas where bicycle staging areas should be part of the access points to the City shoreline. If the railroad lines are abandoned in Alameda, the Plan suggests that these routes could be converted to bicycle use. Continued emphasis by the City on encouraging the bicycle as an alternative means of transportation could result in an increase of bicycle traffic and possible decrease in automobiles, but to a limited extent. If parking for automobiles is restricted in areas adjacent to on-street bikeways, there could be an impact on parking availability in certain parts of the City, causing inconvenience to regular users of the spaces. Generally, alternative parking sites are available in areas of on-street bikeways.

Further Studies by Alameda City Government

The Combined Land Use Plan recommends several studies of traffic patterns in Alameda and

encourages further analysis in existing traffic-control studies. Several of the more pertinent are listed below:

- —Monitoring traffic generated by Estuary development to check actual vs. projected;
- —A study on reducing traffic in Tubes;
- —Design studies and possible funds identified for the Atlantic Avenue Extension;
- —Feasibility study of a passenger ferry system to Oakland and San Francisco;
- —Complete plans to widen Oak Street from Encinal to Lincoln;
- —Study the impacts of Patton Way on Eagle and Pacific Avenues and Eighth Street;
- —Study impacts of all types of Bay Farm Island traffic in the East End;
- —Study the access and control features of South Shore Center;
- —Continue to study traffic circulation issues in the Webster Street and Park Street Revitalization Studies. A plan of action should be developed for a joint study by businesses and the City to provide more parking and direct and convenient access to commercial establishments from both front and rear.

The above recommendations will provide for a continued inflow of traffic information to the City and allow a continuing planning process, which will insure that maximum control to traffic circulation can be exercised.

Alternatives

No Combined Land Use Plan

Under the No-Plan alternative, present conditions in Alameda would continue and Ordinance 1693 N.S. would be unchanged. With Ordinance 1693 and Measure A providing the main guideline for future residential development, all new development would consist of single-family or duplex units with one common wall. Without a new General Plan, attention would be directed to the configuration of open space, siting of structures, and other design factors would be based on existing criteria on a case by case basis. New development would continue to conform to the common wall restriction, and would appear to be more dense than is actually the case, since units would be spread out on lots.

Without development of a new Plan, the City would have to rely on the 1968 DMJM General Plan. That Plan does not conform to Measure A or to the 1976 Settlement Agreement. (See Bay Farm Island — Harbor Bay Isle Development — Background page 173). As part of that litigation, the City was ordered to prepare a new General Plan. In addition, the California Government Code requires that every city must have a General Plan, and must review and update it (see Appendix, p. 237).

The two major areas to be developed, Harbor Bay Isle and the Estuary, would be constructed as single-family and duplex areas, and opportunities for preserving much of the shoreline area for public open space might be difficult to take advantage of. A totally single-family community would generate more traffic and greater demand for city and school services than a mixed density neighborhood of the same number of units. Larger traffic volumes would disrupt neighborhods through which residents of Harbor Bay Isle would have to travel.

Along the Estuary and Ballena Bay, current zoning would hamper the realization of the two areas' full development potential by restricting use to single-family and duplex residences and limited commercial and industrial development. Mixed-use zoning allowing medium density commercial and residential uses along the Estuary and Ballena Bay would create revenue-generating sources for the City. Lower densities of detached units would mean less

availability of land for common recreation and open space. Single-family detached development would not be compatible with the types of commercial development that would attract a regional market, nor would some forms of single-family development be compatible with waterfront-oriented activity.

The No-Plan alternative would provide a narrower range of housing styles and prices and possibly a smaller number of units. If all future housing construction were restricted to single-family and duplex units, families at the lower end of the income scale would have little opportunity to buy homes. The Alameda General Plan Housing Element indicates that currently about 47 percent of Alameda's households could not afford the median sales price for houses in the City. Only a small percentage of local residents would be able to purchase the homes proposed for development in Harbor Bay Isle, the Estuary, and Ballena Bay.

The No-Plan alternative would not provide for programs to encourage improvement of commercial areas along Webster and Park Streets.

Without the Combined Land Use Plan for the Estuary, the Pan America Industries property would continue to be primarily zoned for general industrial and a small portion for hotel-apartment. One of the last remaining sites in the City that could be developed for a mixed use of residential/office/commercial would be restricted to increased industrial development. The adjacent neighborhood to the south would continue to be adversely affected by industrial activity in the Estuary area, and possible recreational development of the shoreline would be limited. Better industrial locations would be available on Bay Farm Island under the Combined Land Use Plan. A mixed-use zoning for the site would allow an opportunity for the City to permit development which could have minimum adverse impact for the area and enhance the aesthetic, residential, and commercial environment.

Without the construction of the Atlantic Avenue Extension intersecting with Patton Way, the improvements on Mariner Square Drive and Mariner Square access, the Fernside Extension, and the implementation of measures to restrict residential street traffic, Alameda would be faced with a crisis in traffic congestion.* Residential streets would deteriorate with increased traffic, the rate of traffic accidents would rise, and access to the City would be curtailed. (All entrances and exits would have traffic volumes exceeding capacity and long queues would result.)**

*Patton Way is far enough along that it would most likely occur without the Combined Land Use Plan. However, major new street programs not provided for in the General Plan would be subject to delays.

**Some traffic experts subscribe to the "theory of forced congestion," which postulates that situations will become so bad that solutions will occur automatically, i.e., people will begin to use the auto less and traffic in residential areas will decline. This theory has not been demonstrated in the Bay Area, and this report predicts continued problems if no recommendations of the Circulation Element are implemented.

East End Transportation Alternatives

The Plan proposes several alternatives for controlling the traffic congestion in the East End. These are discussed in detail below.

No Change

If no changes were made, High Street would deteriorate during peak hours to Service Level E, a condition where long queues develop at intersections. Because of the congestion on High Street, traffic would overflow to other East End streets.

Two-Way Extension of Fernside Boulevard

High Street would have less congestion if Fernside Boulevard were extended to Otis Drive, but conflicts would occur at the intersections of Fernside Boulevard/Otis Drive and Fernside Boulevard/High Street (near the High Street Bridge). The intersections would have to be signalized, and further safety problems could arise.

The two-way extension of Fernside Boulevard was evaluated. A two-way Fernside Extension would pick up the through traffic between the Bay Farm Island and the High Street Bridges, relieving High Street of this traffic. With a Fernside Extension, High Street would have .1 fewer lanes of traffic or approximately 75 fewer vehicles traveling in each direction during peak hours.

To serve the Extension, it would be necessary to signalize the Fernside Boulevard/Otis Drive intersection, permitting left turns from Fernside Boulevard to the Bay Farm Island Bridge. The incline of the bridge would obscure this new intersection, creating safety problems.

The Fernside Extension would operate well in the morning peak period. In the evening peak period, however, Fernside Boulevard traffic turning left would increase conflicts at the High Street/Fernside Boulevard intersection and the required Fernside Boulevard/Otis Drive intersection.

A four-lane extension of Fernside Boulevard between Otis Drive and Encinal Avenue creates more capacity than is needed to meet the projected traffic demand of less than one lane in each direction. In fact, a two-lane extension of Fernside would create more capacity than is needed relative to the capacity of the controlling Bay Farm Island and High Street Bridges. Finally, any extension of Fernside would turn this residential street into a traffic collector.

Expansion of High Street's Capacity

The other major alternative to accommodate projected traffic growth is to expand High Street's capacity by removing parking. This could be done first at intersections to allow left turn lanes. Later, more parking could be removed as a need is demonstrated.

The advantages of this approach are that it would relieve congestion on High Street and would be a relatively inexpensive way to provide the needed capacity.

The disadvantages are that it increases the volume of traffic on this residential street and involves a loss of parking spaces. Vegetation would have to be trimmed or removed to give adequate clearance for large vehicles. The towing required to enforce this system is inconvenient to residents, motorists, and police. It places the entire impact of traffic growth in the East End on one street.

Extend One Lane of Fernside Boulevard Northbound and Expand the Capacity of High Street Intersections

This alternative increases the capacity of the East End to accommodate traffic growth while balancing the impacts on residential streets. A one-lane extension of Fernside Boulevard could be opened up between Otis Drive and Washington Street for northbound traffic, providing relief to High Street. In the evening peak period, High Street would be congested with southbound traffic. Parking near signalized intersections could be prohibited to add a southbound to eastbound left turn lane. This would relieve evening peak hours congestion and improve the visibility and safety of these intersections.

The section of the Fernside Boulevard Extension between Washington Street and Encinal Avenue will be a two-way street and connect to an extension of Washington Street, providing access to the new Lincoln School and the 8 acre undeveloped parcel south of the school, commonly known as the Wood property. (There is an existing agreement between the City of Alameda and the Alameda Unified School District to make this segment of Fernside Boulevard two-way connecting to Washington Street. The Alameda City Council Resolution No. 8568, August 4, 1976, authorized this agreement.)

It is assumed this two-way segment will provide only local access and will not attract southbound traffic, though it would be possible to use this segment to travel southbound via Washington and Peach/Otis intersection, so southbound left turns to the Bay Farm Island Bridge would be difficult and through traffic would be discouraged.

Under this approach, the Fernside Extension would give High Street immediate relief by drawing off northbound through traffic.

Because the Extension is one-way northbound only, a traffic signal would not be required at the Fernside/Otis intersection. Through southbound traffic would not be using Fernside Boulevard, so the problem with left turn conflicts at the High/Fernside intersection would not be aggravated as well.

Fernside Boulevard would have increased traffic, but the impact would not be as great as a two-way extension. High Street, another residential street, would gain some relief from traffic.

Option Plans for Bay Farm Island

The recommendations for the Combined Land Use Plan are based on:

- the Alameda Goals Study;
- optimum use of the land;
- maximum creation and preservation of open space;
- development of a transportation network that would provide the most efficient routes with the least impact on the residential and open-space environment.

The proposed plan for Harbor Bay Isle is the one that the developer believes to be most economically feasible with the least impact on the environment. Three other alternatives focusing on the Harbor Bay Isle development are described below.

fig. 43

BAY FARM ISLAND OPTION PLAN I

KEY

- HEAVY INDUSTRIAL
- LIGHT INDUSTRIAL
- GENERAL COMMERCIAL
- NEIGHBORHOOD COMMERCIAL
- RECREATION COMMERCIAL
- ADMINISTRATIVE PROFESSIONAL
- MIXED USE COMM/OFF/RES
- EXISTING MULTI FAMILY TO REMAIN AT EXISTING DENSITIES
- DELAYED DEVELOPMENT DENSITY B (8 5 U/GR AC)
- MULTI FAMILY - DENSITY E (30 U/GR AC)
- MULTI FAMILY - DENSITY D (20 U/GR AC)
- MULTI FAMILY DENSITY C (15 U/GR AC)
- SINGLE FAMILY CLUSTER DENSITY B (6 5 U/GR AC)
- SPECIAL FAMILY DENSITY A (6 U/GR AC)
- SINGLE FAMILY DENSITY A (6 U/GR AC)
- SINGLE FAMILY DENSITY A (8 U/GR. AC)
- OPEN SPACE AND PARKS
- PROPOSED SCHOOLS
- PROPOSED ROADS

0 1000 2000

SCALE IN FEET

NORTH

Option Plan I

This Plan provides for 3,200 units and the other 2,800 units. This plan (see fig. 43, p. 230). differs from the proposed plan in the type of housing mix available, the density of the housing development, and the configuration of the sites. Option Plan I has fewer roads, a bus-only lane on Island Drive, and much more open space and recreational area. The villages would have a "community focus" by being arranged in clusters around a central eight-acre community park. The 20 acres around the park would have mixed-use zoning. Neighborhood shops would be more centrally located than in the proposed plan, and the schools would be shifted more to the center of the residential areas. City Line Road would have only one connection to a loop road around the Highlands area, and no other access to residential areas would be allowed.

The allocation of residential units for the Option Plan is shown in the table below.

Option Plan I Land Use Allocations

Site	Acres	Use	Units/AC	Total Units
Area 1	45	Density B	8.5	380
Village II				
Area 3	39	Density A	6.0	365
Area 4	26	Density C	15.0	235
Area 5	32	Density E	30.0	390
Area 6	24	Density D	20.0	960
Community Center	20	Mixed Use	20.0	480
Total	186 (plus Village II)			3,210

Table 18

This alternative could have less traffic than the proposed plan due to the housing configuration, which would produce fewer trips per unit. Public transit would be more accessible and could possibly be used more than in the current scheme for Harbor Bay Isle. Less traffic could result in lower engine emission and traffic noise. A greater density would also mean less expense to the City for provision and maintenance of essential services.

Option Plan II

Two other possible versions have been suggested for Harbor Bay Isle; one would allow 2,800 units, the other 3,200.

2,800 Units

Land use patterns for the option plan with 2,800 units are shown in Fig. 43. The allocation of residential uses is as follows:

Density Allocations (2800 Units)

Type of Use (Density)	Acres	Total Units
Single-family density A (6 units/acre)	127	762
Single-family density B (8.5 units/acre)	65	553
Multi-family density C (15 units/acre)	76	1,140
Village II as proposed by developer		365
		2,820

Table 19

fig. 44

BAY FARM ISLAND OPTION PLAN II

KEY

- NEIGHBORHOOD COMMERCIAL
- DELAYED DEVELOPMENT DENSITY B(8.5 U/GR. AC)
- OPEN SPACE
- LIGHT INDUSTRIAL
- GENERAL COMMERCIAL
- RECREATION COMMERCIAL
- PROPOSED SCHOOLS
- EXISTING VILLAGE NO. 2
- SINGLE FAMILY CLUSTER DENSITY B(8.5 U/GR. AC)
- SINGLE FAMILY DENSITY A (6 U/GR. AC)
- MULTI FAMILY-DENSITY D (20U/GR. AC)
- SPECIAL SINGLE FAMILY DENSITY A(6 U/GR. AC)

0 1000 2000

SCALE IN FEET

NORTH

This version of the option plan would conform with Measure A. Maximum density would be 15 units per acre constructed in duplex structures.

Residential use under this option plan would extend beyond the drainage lagoon system* and would occupy most of the area north of existing Bay Farm Island development. Density of residential uses would be lower than for Option Plan I. The predominantly low-density composition of residential use, however, would provide a narrower range of housing choices, since the units would be either single-family or duplex structures.

The low-density uses would also reduce the areas designated for open space. The reduced open space available would provide fewer alternatives for the Least Tern during breeding season and would limit recreational and other open space activities. Although public access to the shoreline would be maintained, the open space along the northern shoreline of Bay Farm Island would be reduced to a narrow strip, adequate for a walkway but restricting active open space uses (recreational, educational) and possibly intruding on the existing marshlands. The area of open space along the southern shoreline would remain the same as for option Plan I.

The boundary between public open space and residential use generally follows the 65 dB noise contour line. Noise levels in the residential area would be lower than 65 dB. Most of the open space along the southern shoreline lies between the 65 and 70 dB contour lines. According to land use guidelines developed by the California Office of Noise Control**, noise levels above 67.5 dB are considered to be"normally" or "clearly" unacceptable for playgrounds and neighborhood parks. The cutoff level for less intensive uses, such as golf courses and water recreation, would be 70 dB. With shoreline open space in the Harbor Bay Isle area intended primarily for low-intensity, passive uses, most of the area designated open space along the southern shoreline appears to be within a "normally acceptable" area from a community noise exposure standpoint.

This option plan would have more miles of roads than Option Plan I, increasing impacts associated with circulation, vehicle miles traveled, automobile emissions, and cost of road construction and maintenance. The distances to public transit from each residential unit would be farther than for the proposed Plan, possibly increasing vehicle miles traveled or discouraging use of public transit.

The property tax income to the City and the Unified School District would be approximately the same as the 2,800-unit option proposed in Option Plan I; however, with low-density residential uses, the cost of public services and utilities would be higher. Single-family developments generally create greater demand for school, street, and utility improvements and services than high-density multiple-family uses.

3,200 Units

This second version of Option Plan II would have the same land use pattern as the first. The basic difference in this alternative is an increase in density. The 76 acres designated for density C (15 units per acre) in the 2,800-unit version would be designated density D (20 units per acre), resulting in a total of 3,200 units. Allocation of residential land uses is as shown in the table on the following page.

*Lagoon locations should not be considered precise as a circular system may not be necessary.

** *Ibid.*

Density Allocations (3200 Units)

Type of Use (Density)	Acres	Total Units
Single-family density A (6 units/acre)	127	762
Single-family density B (8.5 units/acre)	65	553
Multi-family density C (15 units/acre)	76	1,140
Village II as proposed by developer		365
		3,200

Table 20

In contrast to the predominantly single-family and duplex character of residential use in the first version of Option Plan II, about half of the 3,200 units in the second option would be in multi-family structures. Such residential use would line most of the southern residential boundary of Harbor Bay Isle, which is closest to the principal source of noise in the area, and could require that special noise insulation provisions be built into the units.

The additional 400 units and possibly 1,000 more residents would increase traffic volumes, vehicle miles traveled, and auto pollutant emissions; although the open space in this option would be the same as for the 2,800-unit plan, the intensity of use would increase.

The 400 additional units would generate increased property taxes. Cost for public services would also be higher than for 2,800 units, but such costs would not be as high as would be expected if the additional 400 units were single-family structures. Public service costs would be higher for this option plan than for the 3,200-unit Option Plan I, however, because the multiple-family uses in this plan would be lower in density. High density residential uses would require a lower public service cost per unit.

Adverse Environmental Effects

Although the Combined Land Use Plan reflects mitigation measures developed to minimize adverse impacts, the following impacts may be unavoidable:

1. A contribution to urban wastewater runoff and a possible increase of pollutants in the Estuary and the San Leandro Channel, impairing the already poor water quality;
2. Potential destruction of a nesting area of the Least Tern, an endangered species. Despite the large area of open space provided along the shoreline on Bay Farm Island, any development near the nesting area would disturb the Least Tern's breeding activities;
3. The increased population of about 11,500 people would add to the number of vehicles using the congested arterial streets of the City, and there would be an increase of traffic-generated noise and exhaust emissions;
4. The Fernside Extension would result in increased traffic on Fernside Boulevard, a residential street. The southern option for the Atlantic Avenue Extension between Grand and Sherman Streets would increase traffic on those two arterials;
5. Options for further development would be restricted by the lack of available land;
6. The development of Buena Vista Park could result in relocation of several residences and their occupants.

Short Term Uses Versus Long Term Productivity

The Combined Land Use Plan will enhance the local short-term uses of Alameda by contributing to the preservation of local neighborhoods, reducing traffic volumes on residential streets, increasing the number of parks and recreational areas, and conserving the shoreline.

The recommendations contained in the Plan will commit the land to long-term uses for the above types of urban activity. The existing agricultural production of the land on Bay Farm Island will undergo transformation to long-term housing development. Bay Farm Island could also have a more maritime orientation to take advantage of its location. Less than 50 acres of land are still in agricultural production, however, and other parts of Oakland and the Estuary in Alameda capitalize on the maritime activity in the Bay.

Housing is a major need in the region, and the Combined Land Use Plan attempts to meet that long-term need through its recommendations for development of the City's remaining vacant areas.

The Combined Land Use Plan seeks to derive maximum economic benefits from the limited land resources while providing environmental benefits in the form of public access and open space.

Irreversible Environmental Changes

The Combined Land Use Plan could potentially destroy a nesting area for the Least Tern, an endangered species. Despite large areas of open space provided along the shoreline, any development activity near the nesting area would disturb the Least Tern's breeding activities.

Other irreversible and irretrievable environmental changes that would occur if the Plan's recommendations were fully implemented involve the consumption of material, energy, and land resources.

Material resources consumed would be those used in construction of physical aspects of the Plan's recommendations, for the initial equipping of the buildings, and for long-term maintenance of the residences, commercial and industrial buildings, schools, and fire station.

Energy resources would be consumed during the construction of the projects suggested by the Plan in the form of gasoline, diesel fuel, and electricity; and for the maintenance of the structures in the form of electricity and natural gas. Indirect consumption of energy would be caused by increased transportation demands of the population. Land resources would be consumed in terms of site preparation on construction projects, grading and excavation, adding soil (fill), and rearranging soil (landscaping and shaping).

Growth Inducing Impacts

The recommendations of the Combined Land Use Plan address uses for virtually all the open space remaining in the City, including Bay Farm Island, Upon full implementation of the proposed developments, it is unlikely that any inducements for further growth would be noticeable; no additional land is available and further land filling on Bay Farm Island, San Leandro

Channel, or the Estuary would probably not be done; the noise from Oakland and San Francisco International Airports and the Naval Air Station prevents land uses incompatible with the 65 dB or more noise levels; the access to the Main and Bay Farm Islands is limited; the capacity of the sewage treatment facilities would be limited to proposed developments on Bay Farm Island; the soil on some of the vacant sections of filled portions of Bay Farm Island is still settling; and the Combined Land Use Plan specifically designates certain areas for permanent open space.

One area where some growth may be induced is along the Estuary. If a regional commercial center is created there, especially on the Pan America Industries property, further commercial development on both side of the Estuary may be stimulated. A recommendation in the Plan encourages the continued study of developing ferries for commuting and recreation on the surrounding waterways. The development of accessible public water transportation on the Estuary could induce growth of commercial activities in the area.

Unless the bridges to the City were expanded (the Plan opposes this action) and the access to Bay Farm Island from the Nimitz Freeway were improved, new developments in the City would engender few inducements to growth in the Oakland areas adjoining the airport and Alameda.

The new industrial and commercial activities and the construction of nearly 5,000 residential units would contribute to the overall growth of the region, and in that respect could induce growth in other sections of the Bay Area.

Conservation of Natural Resources and Managed Production Resources

The Combined Land Use Plan recommends a number of ways to reduce gasoline consumption through increased use of public transit, car pools, bicycles, and possibly water transportation, improved routes to aid traffic flow, and location of community services near the maximum number of residents on Bay Farm Island, thereby minimizing the number of trips per household.

Presumably the new residential units on Bay Farm Island, the Estuary, Ballena Bay, and other vacant locations would be designed to conserve energy. Compact medium density developments would require fewer improvements (streets, utility lines, etc.) and would generate less traffic per unit.

APPENDIX

Appendix

California State Government Requirements

The California State Government Code outlines certain requirements for Land Use, Circulation, and Open Space Elements of all city and county General Plans, as follows:

> **"A land use element which designates the proposed general distribution and general location and extent of the uses of the land for housing, business, industry, open space, including agriculture, natural resources, recreation and enjoyment of scenic beauty, education, public buildings and grounds, solid and liquid waste disposal facilities, and other categories of public and private uses of the land. The Land Use Element shall include a statement of the standards of population density and building intensity recommended for the various districts and other territory covered by the plan. The land use element shall also identify areas covered by the plan which are subject to flooding and shall be reviewed annually with respect to such areas." (Government Code Section 65302(a))**
>
> **"A circulation element consisting of the general location and extent of existing and proposed major thoroughfares, transportation routes, terminals and facilities, all correlated with the land use element of the Plan." (Government Code Section 65302(b))**
>
> **"a local open space plan for the comprehensive and long range preservation and conservation of open space land within its jurisdiction." (Government Code Section 65302(e))**

ABAG Regional Guidelines

The following are the ABAG policy guidelines related to this Combined Land Use Plan.*

1. City Centered Region

Urban growth in the region should be guided into or around existing or new communities. Living, working, and shopping within the same community should be promoted by all levels of government in the private sector. To make this possible, a wide range of self-serviced residential units convenient to urban centers of employment will be required. The need for long commuting should be reduced.

Policies for open space, water, sewage, and transportation should be coordinated to guide the timing, location, growth, and, wherever necessary, the limits of urban development.

*Association of Bay Area Governments: *Regional Plan 1970-1990*, (Berkeley, California, July 1970), pp. 23-25.

2. Residential Development

All governmental levels, as well as the private sector, should assist in providing, in each community, the maximum number of housing choices in terms of location, style, neighborhood, and price. These choices should uphold local plans to meet the social and economic needs and desires of residents.

Private and public programs providing more low and moderate income housing of good design and healthy environments should be assisted. Programs accelerating rehabilitation efforts should be encouraged.

3. Airports, Military Bases, and Institutions

The designation and use of land for airports, military bases, and institutions should directly support the objectives for a City-Centered Region.

4. Transportation

All plans and designs for the siting and construction of transportation-related facilities should insure the protection and improvement of the quality of the region's environment.

Public transit service should be improved to the degree that it offers the public a more attractive means of urban-oriented travel than the automobile. Especially in areas of severe traffic congestion, where additional highway facilities would not provide adequate improvement or would have adverse community effects, all efforts should be made to encourage a shift from private automobile to public transportation.

5. Open Space

The region should, in anticipation of future needs, secure the public open space that is needed while it is available.

First priority should be given to securing open space within and immediately around the urbanized area.

6. Management of the Regional Environmental System

All levels of government, all groups, and all individuals should plan for, manage, and use the limited natural resources of the Bay region in such a way as to conserve and restore the environment.

All development, public and private, small and large, should maximize the retention and maintenance of natural environmental qualities.

7. Design of the Environment

Strong commitments should be made at all public and private levels to maintain and improve the visual quality of the region.

MTC Regional Guidelines

The following MTC objectives indicate the thrust of their Regional Transportation Plan and are pertinent to the Combined Land Use Plan.*

1. Transportation programs shall consist of well-coordinated multimodal systems to meet demonstrated travel demand which is consistent with policies of other regional agencies.
2. Transportation programs will be designed to reduce dependence on the automobile as a transportation mode.
3. More efficient utilization of existing transportation facilities shall be explored as an alternative to construction of new facilities.
4. Transportation programs shall serve and reinforce other regional agency goals including land use, population, employment and urban development and environmental preservation.
5. Transportation programs shall be designed to conserve energy resources insofar as this is consistent with the provision of necessary and adequate transportation service.
6. Transportation programs shall be designed to enhance the physical environment, or to avoid or to minimize adverse impact on the physical environment.
7. Transportation programs shall be designed to minimize social and economic disruptions to developed neighborhoods and communities in the region and to provide fair compensation and replacement of housing and community facilities to those whose lives are disrupted.
8. Transportation programs and services shall be designed to meet the needs of all social groups with special emphasis on disadvantaged and low-mobility groups.
9. The airport system shall be planned and developed on a regional basis to ensure a coordinated, safe and efficient system.
10. Adequate and efficient surface transportation shall be provided to and from harbors insofar as such transportation facilities are compatible with the regional transportation system.
11. Public participation shall be an integral factor in the preparation, maintenance, and employment of the regional transportation plan.

*Metropolitan Transportation Commission, *Regional Transportation Plan,* (Berkeley, California (1974), pp. 8-22.

Acreage of Non-Residential Land Uses

Table 21

BLOCK	NEIGHBORHOOD COMMERCIAL	GENERAL COMMERCIAL	COMMERCIAL MANUFACTURING	LIGHT INDUSTRIAL	HEAVY INDUSTRIAL	INSTITUTIONAL/ PRIVATE RECREATION	RECREATION AND PARKS	NONRESIDENTIAL VACANT LAND
1					30.0	1603. (Navy)		.96
3					3.68			
4						73.90		
5	.32							
6					.99	5.34		
7					.48		4.16	
8					2.75			8.33
8a	.45	3.25	.17		3.52			
9	.11					.18		
14						4.0		
16a		1.39	.58			.38		
22						.09		
23a						2.77		
24a	.61	.32						
26	.05							
28	.03						1.14	
29						.23		
30	.04							
30a	.10	.69						
33	.04							
36a		.77						
41a	.35	.65						
42						23.1		
44	.04							
45						.48		
46						1.02		
46a		.94						
47								1.75
50			13.39				.07	10.09
53								1.48
55						4.37		
56	.14							10.75
57						8.04		
58			1.06		14.95			4.07
59								39.78
60								12.75
61								13.90
62		1.04			27.49		1.40	
63		11.32		27.75	41.08			39.31
63a				.77	.96			
64			3.50	15.62	73.03	1.26	.62	
64a						60.		
65&65a	.11	.23	.48		.58			
66			.08	.18				
69	.06							
71	.07							
74					.55			
74a		.17						
74b	.39	.29						
78	.04							
79	.29	.25						
80	.13				.53			
80a		1.59						
88					3.51			
89a	.03							

BLOCK	NEIGHBORHOOD COMMERCIAL	GENERAL COMMERCIAL	COMMERCIAL MANUFACTURING	LIGHT INDUSTRIAL	HEAVY INDUSTRIAL	INSTITUTIONAL /PRIVATE RECREATION	RECREATION AND PARKS	NONRESIDENTIAL VACANT LAND
90a	.29							
94					.57			
95						.20		
96	.23	.40						
97					.84			
98	.08	.06						
99a	.21							
101						.08		
102a	.41							
103a	.27							
106a	.09							
107	.01							
107a	.33							
109	.04							
110a	.13	.48						
111a	.08							
112	.13							
113	.07					.15		
114	.07							
115						2.74		
115a	.32	.15						
116a	.27	.10		.07		.14		
117a	.25							
118	.12							
119	.04					.81		
122	.17							
122a		1.23				.08		
123a	.09							
124a		.85						
125						.11		
126	.08							
126a	.21							
126b						2.62		
127	.07							
127a	.16							
128	.04							
131	.18					.25		
132	.05							
133	.07							
135	.14					.34		
138	.19							
139a	.05							
141						.48		
142a		1.19						
144a	.14					.08		
145a	.07		.23					
147		.14						3.25
147a		2.11				.05		
147b		.40						
148							383.0	
149							15.01	
151a	.12							
152a	.33							
153a	.04							
158	.03							
159						1.23		

BLOCK	NEIGHBORHOOD COMMERCIAL	GENERAL COMMERCIAL	COMMERCIAL MANUFACTURING	LIGHT INDUSTRIAL	HEAVY INDUSTRIAL	INSTITUTIONAL /PRIVATE RECREATION	RECREATION AND PARKS	NONRESIDENTIAL VACANT LAND
159a	.28							
168							2.98	
176								2.96
176a	.49					3.24		
177								5.81
187	.25		2.08	2.70	73.90		2.31	
188	.94		1.19		.52			
190a				1.01				
191a			.11					
192a	.38			.17				
193a				.07		.07		
194a	.11		.17	.31				
195	.05		.06	.06				
195a				1.03				
196					2.73	1.81		
197							2.24	
198			.08					
199							1.19	
199a			.21	.11	.59			
201a					5.63			
202	.23	.47	.88	.17				
203	.74		.14			.41		
204	.15			.50				
205						.11		
218	.03					.06		
219	.34							
220	.19		.68					
221		.09						
221a		.27						
223	.04							
226	.09		.17			.16		
227a	.05							
228	.34					.57		
228a	.17							
229	.72	1.21	.23					
230	.56					.27		
231	.03							
232	.07							
234	.24							
234a	.15							
234b						4.5		
235	.21					.16		
235a	.21							
236	1.32		.16			3.54		
237	.31	.33						
238	.27	1.62	.27					
239	.92					1.74		
241						.63		
242	.55					.35		
243	.10					.94		
244	2.15		.18			1.97		
245	.11	3.45						
246						.17		
248						.51		
250			.48	.80		.64		
251						5.94		

BLOCK	NEIGHBORHOOD COMMERCIAL	GENERAL COMMERCIAL	COMMERCIAL MANUFACTURING	LIGHT INDUSTRIAL	HEAVY INDUSTRIAL	INSTITUTIONAL /PRIVATE RECREATION	RECREATION AND PARKS	NONRESIDENTIAL VACANT LAND
252	.23	1.89				.06		
254	.08							
255	.19							
256	.16							
256a	.33							
258						5.93		
259	.88	.34				.21		
262						3.08		
262a	.13							
263						.17		
263a			.25					
264	.16							
266a	.21	.74						
269						.88		
271	.09							
272		.29						
274						.25		
276	.17							
277						.17		
279		.60						
283						.16		
285						5.01		
294							4.78	
294a &b						13.89		
297	.92					2.44		
298	.58	3.78						
299	.58	10.11						
300	.55	.51						
306						2.46		
306a		5.40						
307		17.47						
308		4.47						
312		8.12		.94		2.86		
313	.58	1.99						
314			.05		4.73	.95		.05
315		7.46						
316		1.52			.55			
317	.53	.14	1.09	.34				
318	.62		.17	.81	.83			
319			.08		1.99			
310					1.49			
321				.16				
328	.22							
329	.07							
329a				.21		.33		
330	.12		.99	.52		.82		
331a			.70					
332						.85		
333	.04							
340a	.12							
341a	.11		.80					
342		.16	.68					
357			2.82					
359			.82					
363						2.92		
372	.11	1.27						

BLOCK	NEIGHBORHOOD COMMERCIAL	GENERAL COMMERCIAL	COMMERCIAL MANUFACTURING	LIGHT INDUSTRIAL	HEAVY INDUSTRIAL	INSTITUTIONAL /PRIVATE RECREATION	RECREATION AND PARKS	NONRESIDENTIAL VACANT LAND
373	.34	1.02	.18					
374	.13							
374a	.99					.37		
375						.07		
382a	.10							
385	.19	1.56						
386	.15	1.45		.19				
387	.23	.80	.21	.45				
388	.05							
395	.54		.06					
396a							7.80	
399	.29	1.46	.15			.93		
401	.19							
405	.04							
405a	.19							
407a	.43							
409	.02							
411						2.97		
413						.14		
415						.14		
416	.15					.39		
417						1.32		
418	.33							
421		1.0						
426a						9.0		12.89
427	.30							
427a	.49	.96						
428							2.28	

BLOCK	NEIGHBORHOOD COMMERCIAL	GENERAL COMMERCIAL	COMMERCIAL MANUFACTURING	LIGHT INDUSTRIAL	HEAVY INDUSTRIAL	INSTITUTIONAL /PRIVATE RECREATION	RECREATION AND PARKS	NONRESIDENTIAL VACANT LAND
429						.15		
432	.08					.26		
435						.34		
441	.14							
446	.18							
473a							7.86	
473b						2.73		
486a							.56	
487	.51							
492a								1.13
483	.93	2.34						
500				41.82			1.00	
501							350.00	
503a							5.38	
504				.16				
505a	.14							
514a							10.97	6.85
526a								3.73
528								32.58
529								915.
530				130.0 *				
TOTAL	36.77	114.30	35.63	226.92	298.47	1887.6	804.75	1130.42
* Land leased to Airport								

Residential Densities

BLOCK	NET RESIDENTIAL ACREAGE	AVERAGE UNITS/ACRE	SINGLE FAMILY	TWO FAMILY	3-4 FAMILY	5 OR MORE FAMILY	TOTAL BUILDING TYPE	TOTAL UNITS
2	52.39	5.38				51	51	282
3	75.22	7.69				114	114	579
5	5.39	22.24				22	22	120
7	4.02	46.26				1	1	186
8	23.76	32.53				4	4	743
8a	.67		5				5	5
9	10.97	13.76					73	169
10	.58		7	1	1		9	12
11	1.42	15.71	2	1	5		8	22
12	2.99	13.37				1	1	40
16	4.84	28.71	22	6	2	10	40	139
16a	.86		2				2	2
17	4.47	8.05	36				36	36
18	3.16	7.91	25				25	25
19	1.63	8.58	14				14	14
20	3.98	12.56	19	6	1	2	28	50
21	3.36	11.01	17	4	2	1	24	37
22	1.91	14.13	8	7	3		18	27
23	2.72	11.76	17	3	1	1	22	32
24	2.16	11.57	15	1	1	1	18	25
24a	1.61	19.87	8	3		1	12	32
25	.93		8				8	8
26	3.53	11.04	27	1	2		30	36
27	6.59	13.50	45	22			67	89
28	1.23	31.7	9			2	11	39
29	2.07	11.11	19	2			21	23
30	2.04	18.13	8	5	4	1	18	37
30a	1.38	27.53	7	1	2	1	11	38
15	4.82	29.25	7	1	1	4	13	141
31	2.35	8.51	20				20	20
32	3.53	10.19	27	3	1		31	36
33	5.06	16.60	44	6	3	1	54	84
34	2.35	11.40	14	4		1	19	27
35	2.35	13.61	10	7	1	1	19	32
36	2.26	12.83	13	2	2	1	18	29
36a	1.17	21.36	2	3	3	1	9	25
37	3.47	8.36	29					29
38	3.66	9.29	28	3			31	34
39	6.28	15.13	29	9	8	2	48	95
40	3.98	21.10	31	5	4	2	42	84
41	2.41	29.04	15	1	3	2	21	70
41a	1.13	19.47	3	4	3		10	22
43	1.71	11.71	20				20	20
44	6.29	19.39	44	8	10	4	66	122
45	5.35	20.18	34	14	5	3	56	108
46	1.36	44.85	5	2		1½	8½	61
46a	1.11	22.52	1	4	2	½	7½	25
47	11.13	35.22				15	15	392
48	1.68	14.28	24				5	24
49	2.26	6.64	15				3	15
51	5.55	15.13	84			15	15	84
52	3.25	8.0	26				5	26
53	1.11	10.81	12				1	12
54	5.36	36.75				6	6	197
56	8.34	37.05	6	3		7	16	309
62a	.82					1	1	53
62b	1.03					1	1	84

BLOCK	NET RESIDENTIAL ACREAGE	AVERAGE UNITS/ACRE	SINGLE FAMILY	TWO FAMILY	3-4 FAMILY	5 OR MORE FAMILY	TOTAL BUILDING TYPE	TOTAL UNITS
63a	5.89	22.05				15	15	130
65	2.53	18.97				1	1	48
66	1.43	14.68	14	2	1		17	21
66a	.97		2	1		1	4	34
67	3.67	10.89	29	4	1		34	40
68	3.67	9.26	34				34	34
69	3.55	9.57	30	2			32	34
70	6.02	16.61			1	12	13	100
71	.80		8				8	8
72	1.23	10.56	13				13	13
73	.92		7	2			9	11
74	3.31	5.44	18	2	3		23	31
74a	3.03	9.24	28	12			40	52
75	2.41	12.03	13	8			21	29
76	3.71	8.62	24	4			28	32
77	2.27	10.13	16	1		1	18	23
78	2.06	12.62	14	2	2		18	26
79	1.33	14.28	5	2	1	1	9	19
80	2.76	11.95	14	6	2		22	33
80a	.08		1				1	1
81	1.75	9.71	17				17	17
82	1.75	10.28	14	2			16	18
83	1.75	9.14	14	1			15	16
84	2.41	9.12	12	5			17	22
85	3.68	11.41	21	5	3		29	42
86	2.27	13.65	22	3	1		26	31
87	2.05	17.07	14	4	1	2	21	35
88	1.03	17.47	6	1		2	9	18
89	1.37	15.33	8		2	1	11	21
89a	.34		4			1	5	10
90	.78		6	1			7	8
90a	.24		1	2	1		4	8
91	1.44	15.27	16	1	1		18	22
92	4.06	18.72	11	7	6	4	28	76
93	1.48	11.48	15	1			16	17
94	.96		9	2			11	13
95	1.31	10.68	12	1			13	14
96	1.28	12.50	10	3			13	16
97	4.10	16.83	18	4	4	4	34	69
97a	.37				1	1	2	10
98	3.33	12.31	17	5	3	1	26	41
98a	.65		5		1		6	8
99	1.43	15.38	11	2		1	13	22
100	2.41	12.03	16	4		1	21	29
101	3.69	11.92	19	11	1		31	44
102	1.46	13.6	18	1			19	20
102a	.88			1	1		3	6
103	1.17	11.9	10	2			12	14
103a	.89	60.67	5	2		2	9	54
104	1.97	14.68	20	2	1		23	29
104a	.09			1			1	2
105	2.06	12.13	14	3		1	18	25
106	3.73	15.81		7	3	1	11	59
106a	.20		3				3	3
107	3.66	13.66	25	7	2	1	35	50
108	1.46	15.07	8	3	2		13	22

BLOCK	NET RESIDENTIAL ACREAGE	AVERAGE UNITS/ACRE	SINGLE FAMILY	TWO FAMILY	3-4 FAMILY	5 OR MORE FAMILY	TOTAL BUILDING TYPE	TOTAL UNITS
109	1.36	18.38	14		3		17	25
110	4.71	22.93	23	8	3	2	36	108
110a	1.83	16.94	4	4	4	1	13	31
111	2.97	13.47	16	3	4	1	24	40
111a	.69		3		1	1	5	13
112	5.89	19.52	26	11	3	6	46	115
112a	.48		3		2		5	10
112b	.39		2		1		3	5
113	3.94	15.73	15	7	7	2	31	62
114	4.82	17.01	19	2	4	8	33	82
115a	1.48	22.97	5	1	1	2	9	34
116	3.21	12.46	16	2	6		24	40
116a	.89		1	3	1	1	6	16
117	3.81	14.96	19	4	6	2	31	57
118	4.06	14.53	16	8	4	2	30	59
119	4.01	13.96	21	7	6		34	56
120	5.42	11.07	26	1	6	2	35	60
121	4.52	16.59	31	1	4	4	40	75
122	4.64	17.67	14	8	4	4	30	82
122a	.81	22.22	3	2	3		8	18
123	3.39	12.39	22	2	3	1	28	42
123a	.26			1	2		3	9
124	.69		7	1			8	9
124a	1.29	34.11	6	1		3	10	44
125	3.74	17.37	19	4	2	2	27	65
126	.75		1	2	2		5	12
126a	.42			2			2	4
127	3.62	14.91	20	7	5	1	33	54
128	3.20	18.75	13	12	4	1	30	60
129	3.99	15.79	18	3	5	3	29	63
130	3.99	16.04	24	9	3	2	38	64
131	3.55	19.43	13	5	1	5	24	69
131a	.44		2	1			3	4
132	3.94	15.74	16	3	1	7	27	62
133	5.25	19.81	21	7	10	6	44	104
134	2.43	15.64	14	1	5	1	21	38
135	4.44	25.22	8	3	6	6	23	112
136	1.0	26.0	3		3	2	8	26
137	2.65	19.62	10	2	6	2	20	52
138	.25		2	1			3	4
139	1.06	47.16	2	2	1	3	8	50
139a	.06				1		1	3
140	3.13	22.68	10	1	5	5	21	71
141	3.26	11.04	15	2	3	1	21	36
142	1.03	46.59	6			2	8	48
142a	.62		3	1		5	9	10
143	3.72	26.61	15	2		1	18	99
144	3.84	15.62	20	5	3	3	31	60
145	2.88	17.36	14	5	7		26	50
145a	1.29	19.38	6	4	1	1	12	25
146	3.79	16.09	16	12	3	2	33	61
147	8.19	47.13			4		4	386
147a	.25		1				1	1
150	3.88	9.53	37				37	37
151	4.92	12.39	17	4	3	2	26	61
151a	.25		2				2	2

BLOCK	NET RESIDENTIAL ACREAGE	AVERAGE UNITS/ACRE	SINGLE FAMILY	TWO FAMILY	3-4 FAMILY	5 OR MORE FAMILY	TOTAL BUILDING TYPE	TOTAL UNITS
152	3.89	13.37	21	12	2		35	52
152a	1.03	15.53	5	2	2		9	16
153	2.45	11.02	17	5			22	27
153a	.29			1	1	1	3	10
154	2.88	16.66	22	9		1	32	48
155	4.32	8.10	24	3		1	28	35
156	4.06	7.85	28	2			30	32
157	4.0	9.0	24		1	1	26	36
158	2.95	8.13	13	2	2		17	24
159	2.43	7.82	12	1		1	14	19
159a	.44		1	1			2	3
160	3.14	7.32	23				23	23
162	3.89	14.91	17	1	1	1	20	58
163	2.38	10.50	15	3	1		19	25
164	9.12	7.34	67				67	67
165	7.48	4.81	36				36	36
166	8.86	4.85	37	3			40	43
167	6.55	7.94	35	2	2	1	40	52
169	3.37	10.38	18		1	1	20	35
170	3.37	5.04	17				17	17
171	3.05	5.90	18				18	18
172	3.37	6.23	19	1			20	21
173	2.08	3.36	7				7	7
174	4.08	4.65	19				19	19
175	24.2	5.95	144				144	144
178	6.06	8.08	49				49	49
179	8.58	7.81	67				67	67
180	20.05	38.25	17			13	30	767
181	3.81	8.39	32				32	32
182	3.99	8.52	34				34	34
183	3.81	8.39	32				32	32
184	3.99	8.52	34				34	34
185	3.81	8.39	32				32	32
186	3.99	8.52	34				34	34
187	.15		2				2	2
188	.41		3				3	3
189	.43		4	1			5	6
189a	.34		4				4	4
190	.55			3	2		5	12
191	.75		7	1			8	9
191a	.64		9	1			10	11
192	.75		5	2	1		8	12
192a	.20		2				2	2
193	.75		8	2			10	12
193a	.58		3	2	1		6	10
194	1.43	9.79	7	2	1		10	14
194a	.84		7	2	1		10	14
195	1.21	13.22	9	2	1		12	16
195a	.40		5				5	5
198	1.32	12.87	6		2	1	9	17
200	3.94	11.67	27	8	1		36	46
201	2.05	13.17	21	3			24	27
202	1.30	15.38	10	3	1		14	20
203	2.17	16.13	16	3	2	1	22	35
204	.86		6	3		1	10	18
205	1.38	19.56	10	7	1		18	27

BLOCK	NET RESIDENTIAL ACREAGE	AVERAGE UNITS/ACRE	SINGLE FAMILY	TWO FAMILY	3-4 FAMILY	5 OR MORE FAMILY	TOTAL BUILDING TYPE	TOTAL UNITS
206	1.51	17.22	3	6	3		12	26
207	1.51	14.57	9	2	1	1	13	22
208	1.51	13.24	12	1	2		15	20
209	2.89	10.02	19	5			24	29
210	2.82	14.18	11	2	5	1	19	40
211	2.89	16.61		6	4	3	13	48
212	1.51	14.56	4	9			13	22
213	1.51	11.24	12	4			16	20
214	1.51	13.24	11	1	2		13	20
215	1.51	13.24	11	1	2		13	20
216	1.51	11.26	12	1	1		14	17
217	6.19	16.80	25	7	4	10	46	104
218	6.13	14.03	24	13	9	1	47	86
219	6.03	15.75	21	9	8	4	42	95
220	2.59	20.46		1	1	3	5	53
221	1.11	12.61	12	1			13	14
222	1.47	17.00	13		1	1	15	25
223	1.45	16.55	13	1	1	1	16	24
224	1.46	11.64	14		1		15	17
225	1.50	14.66	7	1	2	1	11	22
226	4.98	15.66	22	5	7	4	38	78
226a	.58		2	2			4	6
227	5.40	14.36	25	6	9	2	42	77
227a	.59		4	2			6	8
228	4.79	64.42	28	5	3	4	40	117
229	.86		3	2	1		6	11
230	3.62	21.27	21	7	6	3	37	77
230a	.20		2				2	2
231	2.06	27.18	10	1	3	2	16	56
232	2.03	17.73	12	2	4	1	19	36
233	2.06	29.12	8	2	2	4	16	60
234	2.17	20.27	4	1	1	3	9	44
234a	.89		1	2	1	1	5	15
235	7.32	28.41	13	5	2	14	34	208
235a	.68		1	2	1		4	9
236	3.56	29.49	6	4	3	4	17	105
237	.71					1	1	50
238	.36		4	2			6	8
239	2.98	27.85	8	1	1	4	14	83
240	4.72	23.09	16			6	22	109
241	1.49	21.47	9	2		2	13	32
242	7.65	30.06	12	3	4	15	34	230
243	7.69	24.71	14	4	9	10	37	190
244	4.27	25.52	11	4	4	8	27	109
245	.10		8				8	8
246	3.07	21.82	9	2	4	3	18	67
247	3.25	35.38	8	2	3	8	21	115
248	.60		6	1	2		9	15
249	5.99	18.19	21	3	5	8	37	109
250	4.06	18.47	10	3	5	7	25	75
252	.25			1	2	1	4	17
253	3.19	13.48	15	5	4	1	25	43
254	3.26	16.56	14	6	5	2	27	54
255	.76		1	1	1	1	4	12
255a	.52		2	2	1		5	9
256	4.80	18.33	15	4	9	5	33	88

BLOCK	NET RESIDENTIAL ACREAGE	AVERAGE UNITS/ACRE	SINGLE FAMILY	TWO FAMILY	3-4 FAMILY	5 OR MORE FAMILY	TOTAL BUILDING TYPE	TOTAL UNITS
256a	.64		2		1		3	6
257	6.19	16.32	27	13	5	5	50	101
258	.06		1				1	1
259	.58		6	1	1		8	12
260	3.29	13.37	14	5	4	1	24	44
261	3.30	15.80	13	2	4	3	22	52
262a	.13					1	1	6
263	5.60	14.64	20	9	7	3	39	82
263a	.22		3				3	3
264	6.04	16.06	18	10	13	2	43	97
265	5.92	27.53	18	7	6	13	44	163
266	.09		2	2	2		6	13
266a	.54		7	1	1		9	13
267	3.41	9.09	17	1		2	21	31
268	3.40	10.60	16	4	4		24	36
269	5.35	19.44	20	7	4	8	39	104
270	6.19	16.96	18	5	11	7	41	105
271	5.95	23.53	19	6	8	12	45	140
272	.70		5	2	1		8	12
272a	.51		7				7	7
273	3.40	6.76	23				23	23
274	3.20	28.75	8	2	8	3	21	92
275	1.50	21.33	8	2		4	14	32
276	6.02	23.09	21	6	10	11	48	139
277	6.02	16.11	20	5	11	7	43	97
278	5.92	33.78	20	5	5	13	43	200
279	1.16	16.35	12	2	1		15	19
280	6.08	4.93	27		1		28	30
281	1.10	8.18	9				9	9
282	3.1	10.96	3		6	2	11	34
283	.76		1		2		3	8
284	1.98	11.61	1	6	3		10	23
286	6.23	19.42	6	3	9	10	28	121
287	3.19	14.11	15	7	3	1	26	45
288	4.33	12.70	23	8	1	2	34	55
289	5.09	11.78	34	9	1	1	45	60
290	3.81	14.17	38	8			46	54
291	16.40	6.40	105				105	105
292	3.51	25.64				1	1	90
293	8.91	31.65				9	9	282
295	4.77	9.22	44				44	44
296	6.41	11.81	66				66	66
297a	.46					1	1	15
301	2.10	8.09	17				17	17
302	2.56	8.20	21				21	21
303	2.48	8.06	20				20	20
304	2.61	8.43	22				22	22
305	2.02	48.51				1	1	98
309	9.00	40.77				5	5	367
310	13.99	37.74				11	11	528
311	5.96	33.72				1	1	201
317	1.02	10.78	5	1	1		7	11
318	1.45	11.03	8	2	1		11	16
319	1.10	17.27	1	4	3		8	19
320	.37		1	2			3	5
321	6.33	7.58	46	1			47	48

BLOCK	NET RESIDENTIAL ACREAGE	AVERAGE UNITS/ACRE	SINGLE FAMILY	TWO FAMILY	3-4 FAMILY	5 OR MORE FAMILY	TOTAL BUILDING TYPE	TOTAL UNITS
322	2.32	6.89	16				16	16
323	2.02	13.36	17	5			22	27
324	3.68	8.42	31				31	31
325	2.61	10.72	28				28	28
326	2.05	9.27	19				19	19
327	2.06	10.67	22				22	22
328	1.78	11.23	14	3			17	20
328a	.08		1				1	1
329	9.42	8.07	24	16	5	1	46	76
330	1.22	13.11	8		1	1	10	16
331	1.72	14.53	7	3	3		13	25
331a	1.14	12.28	10	2			12	14
332	1.22	14.96	3	3	3		9	18
333	5.37	8.94	36	3	2		41	48
334	1.79	12.29	18	2			20	22
335	1.79	11.73	19	1			20	21
336	2.77	10.47	29				29	29
337	2.75	9.82	25	1			26	27
338	2.86	9.09	24	1			25	26
339	1.82	9.89	18				18	18
340	1.48	8.78	11	1			12	13
341	1.93	14.51	9	3		2	14.	28
341a	.79		1	1		2	4	14
342	1.12	10.71	8	2			10	12
342a	.41		4				4	4
343	1.43	16.08	6	3	3		12	23
344	1,65	10.30	17				17	17
345	1.65	10.90	16	1			17	18
346	1.83	9.29	17				17	17
347	1,83	8.74	16				16	16
348	4.06	6.40	26				26	26
349	2.21	8.14	18				18	18
350	1.76	7.38	13				13	13
351	2.10	10.47	20	1			21	22
352	2.73	8.06	22				22	22
353	3.47	8.07	28				28	28
354	1.51	8.61	13				13	13
355	2.67	8.98	24				24	24
356	2.28	9.21	21				21	21
357	.57		5	1	1		7	11
358	1.56	15.38	9	2	3		14	24
359	.50		3		1		4	7
360	1.94	12.37	22	1			23	24
361	3.40	22.06	28	1	2	4	35	75
362	4.90	10.82	41	3		1	45	53
364	2.29	9.17	21				21	21
365	2.20	9.09	20				20	20
366	3,65	6,57	24				24	24
367	2.58	8.53	22				22	22
368	6.34	8.67	53	1			54	55
369	.96		16				16	16
370	7.41	7.15	53				53	53
371	6.98	8.74	57	2			59	61
372	1.61	37.88	2	4	1	7	14	61
373	.61		4	3		1	8	16
374	3.96	15.40	30	5	4	1	40	61

BLOCK	NET RESIDENTIAL ACREAGE	AVERAGE UNITS/ACRE	SINGLE FAMILY	TWO FAMILY	3-4 FAMILY	5 OR MORE FAMILY	TOTAL BUILDING TYPE	TOTAL UNITS
374a	.36		4	1			5	6
375	15.71	4.01	27	11	4		42	63
376	3.15	11.75	19	1	2	1	23	37
377	3.06	8.17	25				25	25
378	5.06	8.30	37	1	1		39	42
379	2.75	9.82	27				27	27
380	1.10	11.82	11	1			12	13
381	2.59	9.66	26				26	26
382	2.38	10.50	25				25	25
382a	.14			.2			2	4
383	5.91	9.98	55	2			57	59
384	1.92	8.85	17				17	17
386	.23		4				4	4
387	.36		1			1	2	17
387a	2.06	61.16	3	1		2	6	126
388	3.05	20.33	17		3	5	25	62
389	2.13	13.61	9	2	2	1	14	29
390	.56		6				6	6
391	2.00	8.0	16				16	16
392	2.73	8.06	20	1			21	22
393	1.80	10.0	16	1			17	18
394	1.80	8.33	15				15	15
395	.96		9				9	9
395a	.37		2			1	3	9
396	5.87	11.95	42	22	2		66	70
397	5.71	9.11	44	4			48	52
398	2.20	5.0	9	1			10	11
399	1.11	60.36	7	2	3	3	15	67
400	4.54	12.55	22	4	6		32	57
400a	.41					1	1	62
401	2.37	20.67	14	1	2	2	19	49
402	1.93	11.92	19	2			21	23
403	1.65	13.94	19		1		20	23
404	7.86	17.43	44	6	3	10	63	137
405	5.86	11.60	20	15	3	1	39	68
405a	.36					1	1	8
406	2.02	9.40	15	2			17	19
407	3.76	10.37	25	7			32	39
407a	.58		1				1	1
408	1.85	10.27	15	2			17	19
409	1.93	10,88	15	3			18	21
410	2.17	11.98	20	3			23	26
412	1.42	13.38	17	1			18	19
413	1.54	7.79	12				12	12
414	1.26	10.31	13				13	13
415	1.28	14.06	14	2			16	18
416	.73		4	1		1	6	10
418	1.03	20.39	8	1	1	1	11	21
418a	.06		1				1	1
419	4.93	12.17	38	11			49	60
420	7.01	12.69	40	5	4	4	53	89
421	7.14	15.27	32	7	7	6	52	109
422	4.21	9.26	37	1			38	39
423	2.16	10.18	22				22	22
424	1.56	8.97	14				14	14
425	1.31	7.63	10				10	10

BLOCK	NET RESIDENTIAL ACREAGE	AVERAGE UNITS/ACRE	SINGLE FAMILY	TWO FAMILY	3-4 FAMILY	5 OR MORE FAMILY	TOTAL BUILDING TYPE	TOTAL UNITS
426	1.36	7.35	10				10	10
427	1.52	18.39	5	5	2	1	13	28
427a	.07				1		1	3
427b	.08		2				2	2
428	3.48	12.64	23	3	3	1	30	44
430	5.65	15.93	24	7	3	4	38	90
431	5.18	13.51	33	6	4	2	45	70
432	2.91	10.65	25	3			28	31
432a	.23			1	1		3	6
433	1.87	14.44	14	2	3		19	27
433a	.34		4				4	4
434	4.43	10.60	35	1	1	1	38	47
435	.76		9				9	9
436	1.0	15.0	15				15	15
437	1.11	14.41	10	1	1		12	16
438	1.0	11.0	11				11	11
439	1.11	11.71	11	1			12	13
440	1.0	12.0	12				12	12
441	.66		4	3			7	10
441a	.42		6				6	6
442	1.0	15.0	15				15	15
443	4.76	14.07	53	7			60	67
444	1.0	15.0	11	2			13	15
445	2.31	10.82	23	1			24	25
446	9.09	23.76	25	12	14	9	60	216
447	9.93	17.42	36	13	12	10	71	173
448	8.51	16.09	36	7	2	8	53	137
449	3.48	10.63	33	2			35	37
450	4.14	10.14	27	4	2		33	42
451	3.94	14.21	39	3	3		45	56
452	3.54	11.01	39				39	39
453	2.89	10.38	28	1			29	30
454	2.67	13.85	29	4			33	37
455	1.26	9.52	12				12	12
456	1.26	11.90	15				15	15
457	4.13	13.32	38	3	2	1	43	55
458	1.87	12.83	24				24	24
459	1.85	12.43	23				23	23
460	4.91	14.05	43	10	1		54	69
461	.74		8	1			9	10
462	.74		11				11	11
463	1.0	13.0	13				13	13
464	1.0	13.0	13				13	13
465	1.0	14.0	14				14	14
466	1.0	14.0	14				14	14
467	1.0	15.0	15				15	15
468	1.0	13.0	13				13	13
469	1.0	12.0	12				12	12
470	1.0	13.0	13				13	13
471	1.0	13.0	13				13	13
472	1.0	11.0	11				11	11
473	1.14	9.65	11				11	11
474	1.0	14.0	14				14	14
475	1.0	12.0	12				12	12
476	2.37	9.70	21	1			22	23
477	2.37	9.70	23				23	23

BLOCK	NET RESIDENTIAL ACREAGE	AVERAGE UNITS/ACRE	SINGLE FAMILY	TWO FAMILY	3-4 FAMILY	5 OR MORE FAMILY	TOTAL BUILDING TYPE	TOTAL UNITS
478	1.0	14.0	14				14	14
479	1.0	15.0	15				15	15
480	2.37	10.55	25				25	25
481	1.35	9.63	13				13	13
482	2.31	10.28	25				25	25
483	2.31	10.28	25				25	25
484	2.09	10.53	22				22	22
485	1.92	6.77	13				13	13
486	.72		10				10	10
487	2.36	12.71	30				30	30
488	1.39	12.23	17				17	17
489	4.13	10.89	45				45	45
490	6.26	9.90	62				62	62
491	1.04	7.69	8				8	8
492	6.07	12.19	74				74	74
493	9.04	43.69				6	6	395
494	4.86	10.08	49				49	49
495	1.43	12.59	18				18	18
496	2.14	12.15	26				26	26
497	1.84	5.98	11				11	11
498	2.21	13.57	30				30	30
499	2.57	13.23	34				34	34
502	1.69	9.45	12	2			14	16
502a	.34			1		1	2	22
503	1.50	7.98	12				12	12
504	3.94	3.29	7	3			10	13
505	3.50	8.28	27	1			28	29
505a	.04			1			1	2
506	5.58	9.68	30	12			42	54
507	1.41	7.09	10				10	10
508	5.48	8.03	34	5			39	44
508a	.12					1	1	6
509	2.88	7.99	23				23	23
510	.78		6				6	6
511	4.20	8.80	37				37	37
512	2.29	5.67	13				13	13
513	5.52	5.61	25	3			28	31
514	39.33	10.32	406				48	406
515	2.41	6.22	15				15	15
516	4.46	7.62	32	1			33	34
517	1.76	10.23	18				18	18
518	6.44	7.14	46				46	46
519	1.94	10.31	20				20	20
520	2.15	10.69	23				23	23
521	5.23	8.41	44				44	44
522	42.24	10.42	440				49	440
523	1.43	7.67	11				11	11
524	4.45	6.29	28				28	28
525	1.45	8.27	12				12	12
526	33.21	10.18	338				38	338
Total	1806.08	14.80	10,428	1190	816	684	11,744	26,664

Acreage and Density Calculations

In the descriptions of proposed residential land use categories, a minimum lot size or building site area per dwelling unit is recommended. This minimum lot size is used as the basis for determining probable net and gross densities.

Gross acreage includes all land that could be owned in fee by a property owner. Net acreage is what remains after subtracting public right-of-ways and land covered by lagoons or other water.

To determine density per net acre, the net acreage is divided by the minimum lot size. For example:

1 Acre Parcel 43,560 sq. ft.	Minimum Lot Size or Building Site Area	Net Density (du/per net acre)
43,560 divided by	5000	8.71
43,560 divided by	3500	12.45
43,560 divided by	2000	21.78

Density per gross acre is more variable, depending on the amount of land devoted to streets. In a single-family category with a minimum lot size of 5000 square feet, the density per gross acre could vary between 6 and 7.4 depending on how much land is devoted to streets. Table 23 demonstrates the variation in gross densities for various minimum building site areas.

In the description of land use categories, the net acreage permitted within the category is precise. The gross acreages mentioned are estimates based on how much is generally devoted to streets within that type of category. For instance, standard single-family developments, with each lot fronting on a street with a 60' right-of-way, generally devote no more than 30% of its gross acreage to streets. In higher density categories, less land is devoted to streets. In the medium density category, where a 2000 square foot minimum lot size is required, no more than 20% of the gross acreage could be devoted to streets, so the gross density is estimated at 17.5%. Precise densities for particular projects are unknown until specific site plans are developed. It is, however, difficult to develop a specific site plan until it can be estimated, by gross density, how many units the land use plan and zoning regulations wil allow on a site. This requires a knowledge of gross acreage.

For development or rebuilding of residential units on small parcels in developed areas, the street pattern is established and the net acreage can be easily determined. Therefore, it is best to use net acreage in these cases.

Calculation of Gross Densities

	Percentage Devoted to Streets				
	15	20	23	25	30
5000 Sq. Ft. Minimum Building Area					
Gross Density	7.4	7.0	6.7	6.5	6.1
Net Density	8.7	8.7	8.7	8.7	8.7
3500 Sq. Ft. Minimum Building Area					
Gross Density	10.6	10.0	9.6	9.3	8.7
Net Density	12.4	12.4	12.4	12.4	12.4
2000 Sq. Ft. Minimum Building Area					
Gross Density	18.5	17.4	16.7	16.3	15.3
Net Density	21.8	21.8	21.8	21.8	21.8

Table 23

Peak Hour Level of Service Definitions

Level of Service	Traffic Conditions
A	Typically the approach to the intersection appears quite open, turning movements are easily made.
B	The approach to the intersection is occasionally fully utilized and some delay may be encountered in turning movement. If signalized, no vehicle waits longer than one red indication.
C	Driver begins to feel somewhat restricted, the approach to the intersection is often loaded and back-ups may occur behind turning vehicles. If signalized, the driver may have to wait more than one red indication.
D	Increasing restriction causing substantial delays and queues on approaches to intersection. Queues do not become excessive but are generally present throughout the peak period. If signalized, vehicles may wait longer than two red indications.
E.	Maximum capacity of intersection. Long queues of vehicles waiting upstream of the intersection. If signalized, vehicles may be delayed up to several signal cycles.
F.	Completely unstable condition when intersection is completely jammed. Back-ups from locations downstream or on cross street may restrict movement of vehicles out of approach.

Table 24

SCHOOLS AND OPEN SPACE ASSOCIATED WITH SCHOOLS IN ALAMEDA

Class Levels	Names of Schools in Alameda	TOTAL AREA					Description of Open Space
		Total Land Area (in acres)	Total Building Area (in sq.ft.)	Ground Floor Area (in sq ft.)	Total Open Space (in acres)	Adjacent Parks (in acres)	
K-3	Mastick School	2.6	30,244	30,244	1.9		Paved schoolyard, landscaping
K-5	Edison School	3.2	27,125.7 (a)	24,616.9	2.8		Paved schoolyard, landscaping
K-4	George Miller School (b)	5.	24,000	24,000	4.4		
K-5	Frank Otis School (c)	3.6	40,703	33,595	2.8	8.6	Paved schoolyard, some landscaping
K-4	Woodstock School	5.33	33,582	33,582	4.6	4.0	Paved schoolyard, parking
6-8	New Lincoln School (d)	9 (e)	53,358	53,358	7.8		
K-5	Franklin School	1.23	21,407	12,592	.9	3.1	Paved schoolyard, landscaping
K-8	New Haight School (f)	3.78	52,552	32,361	3.0		Baseball diamond, grassed in play areas
K-5	Donald Lum School	4.2	45,339	45,339	3.2	5.0	Paved schoolyard, landscaping, parking
K-5	William G. Paden Sch	4.23	31,581	22,947	3.7		Paved schoolyard, parking
4-6	Longfellow School	2.77	39,702	31,358.2	2.0	1.0	Paved schoolyard
4-8	Washington School	2.63	55,431	36,190	1.8		Paved schoolyard
5-8	Lincoln School (g)	2.53	73,056	23,294	2.0		Paved schoolyard
6-8	Chipman School	3.98	56,481	37,345	3.1	4.0	Paved schoolyard, parking
6-8	Will Wood School	10.11	67,173	43,098	9.1	5.0	Paved schoolyard, track field, play areas, parking
9-12	Alameda High School	6.55	204,084	133,718	3.5		Schoolyard, landscaped grounds, parking
9-12	Encinal High School	23.3 (h)	139,014	123,665	20.5		Trackfield, basketball courts, schoolyards, baseball diamond, landscaped areas, parking, athletic complex
11-12	Island High School	.83	10,260	10,260	.6		Paved schoolyard
	Thompson Field	2.28	-	-	2.28	1.19	Playfield
	TOTAL	97.27	1,005,092.7	801,563.1	29.98		

Notes:

a. Includes two buildings @ 2000 sq. ft. total, to be finished summer 1976.

b. George Miller School is now on the Naval Air Station. This school (K-5) will be built on Singleton Avenue in 1977.

c. In summer 1976, there will be changes in square footage of building, adding approximately 4400 sq. ft.

d. Will be opened in September 1976.

e. 12 acres, including Fernside Extension.

f. New school (K-8) to be opened September 1976.

g. This school will be torn down.

h. Includes some water area.

i. Estimated from plans.

Source: - Mr. Frank - Unified School District Physical Plant Data

- Alameda Unified School District State Aid Evaluation Study - July 19, 1967

Neighborhood Open Space

PARK (1)	AREA (2) (Acres)	SCHOOL OPEN SPACE	AREA (3) (Acres)
Woodstock Park	4.2	Paden School	3.7
Longfellow Park	1.1	Woodstock School	4.6
Buena Vista Park (under construction)	3.6	Mastick School	1.9
Franklin Park	3.0	Franklin School	.9
McKinley Park	1.2	Donald Lum School	3.2
Jackson Park	2.3	Haight School	3.0
Edison Park	.4	Edison School	2.8
Rittler Park	4.8	Frank Otis School	2.8
Godfrey Park	5.4		
Total	26.	Total	22.9
Average Size Parks per 1000 Population	2.89 .43	Average Size School Open Space per 1000 Population	2.86 .32

Total Neighborhood Open Space = 48.9 Acres

Neighborhood Open Space per 1000 Population = .82 Acres

Regional Open Space

PARK	AREA (Acres)
Alameda Municipal Golf Course	350
Crown Memorial State Beach Park	383
Total	733
Average Size	366.5

Total Regional Open Space 733.0

Regional Open Space per 1000 Population = 12.29 Acres

Community Open Space

Park and Special Recreational Facilities (5)	AREA (Acres)	School Open Space (6)	AREA (Acres)
Bay Farm Recreation Center	1.8	Alameda High School	3.5
Washington Park	15.	Encinal High School	20.5
Lincoln Park	8.	Chipman School	3.1
Krusi Park	7.8	Longfellow School	2.0
Alameda Swim Center	.5	Washington School	1.8
Boat Ramp	.5	Wood School	9.1
Model Airplane Field	.5	Island High School	.6
		New Lincoln School(under construction)	7.8
		Lincoln School (existing)	2.0
		Thompson Field	2.28
Total	34.1	Total	52.68
Average Size Parks per 1000 Population	4.87 .57	Average Size School Open Space per 1000 Population	5.27 .90

Total Community Open Space = 86.78 Acres

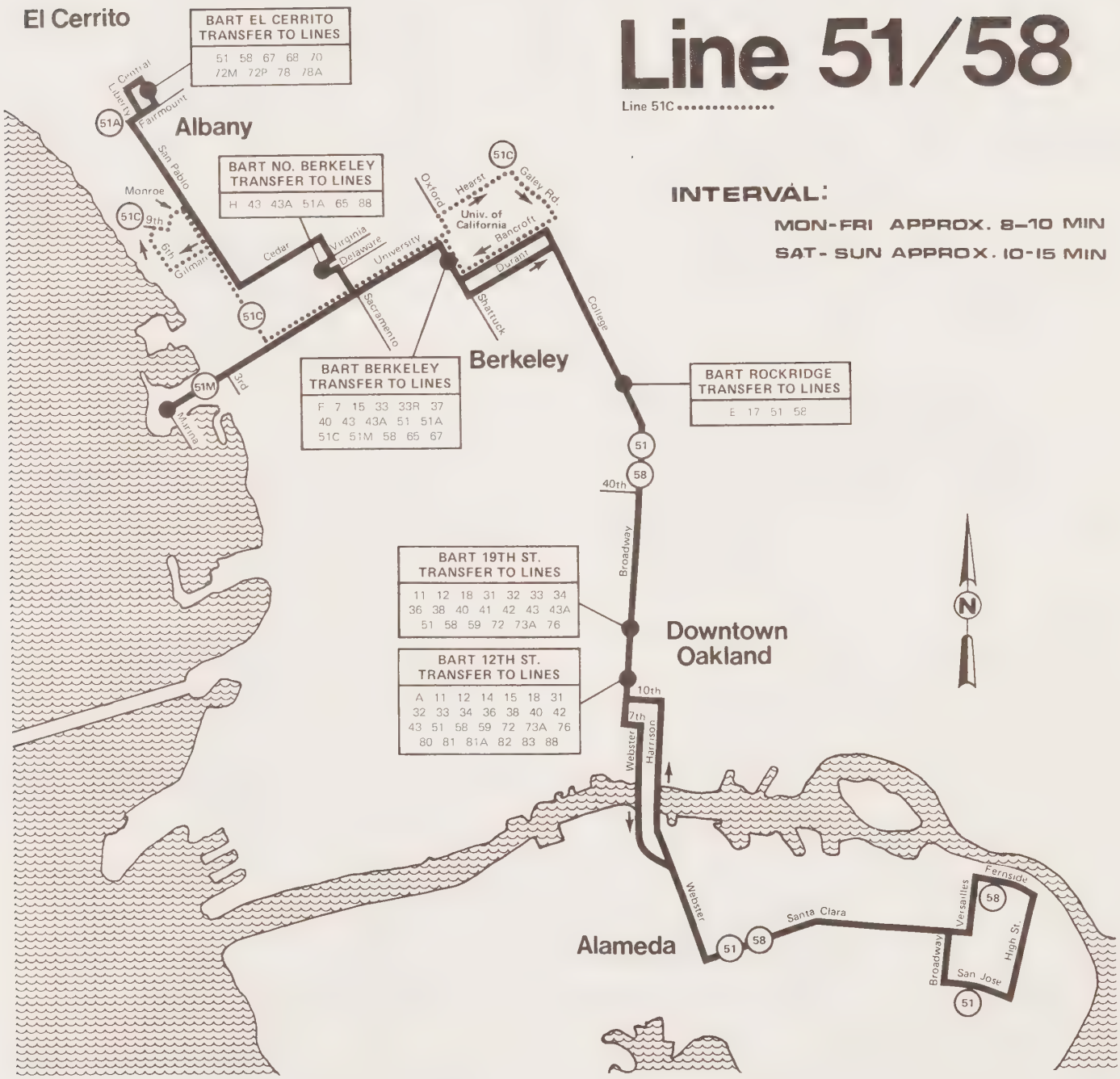
Community Open Space per 1000 Population = 1.45 Acres

1. Size and surveys of Park character determined whether a Park was a neighborhood, community or regional facility. Parks of 5 acres or less were defined as Neighborhood Parks.
2. Source: Map of City Properties, City of Alameda. Revised October, 1975.
3. Open Spaces associated with Elementary Schools are neighborhood open spaces. The amount of open space is based on the table "Schools and Open Spaces Associated with Schools in Alameda."
4. The Population of Alameda, excluding the Naval Air Station, is 59,720 according to the 1970 U. S. Census.
5. Parks of more than 5 acres and Special Recreational Facilities are Community Open Spaces.
6. Open Spaces Associated with Junior High Schools (grades 5 and above) and Senior High Schools are Community Open Spaces. The amount of open space is based on the table "Schools and Open Spaces Associated with Schools in Alameda."
7. The proposed addition to Washington Park is included.

Acreage of Neighborhood, Community and Regional Open Space

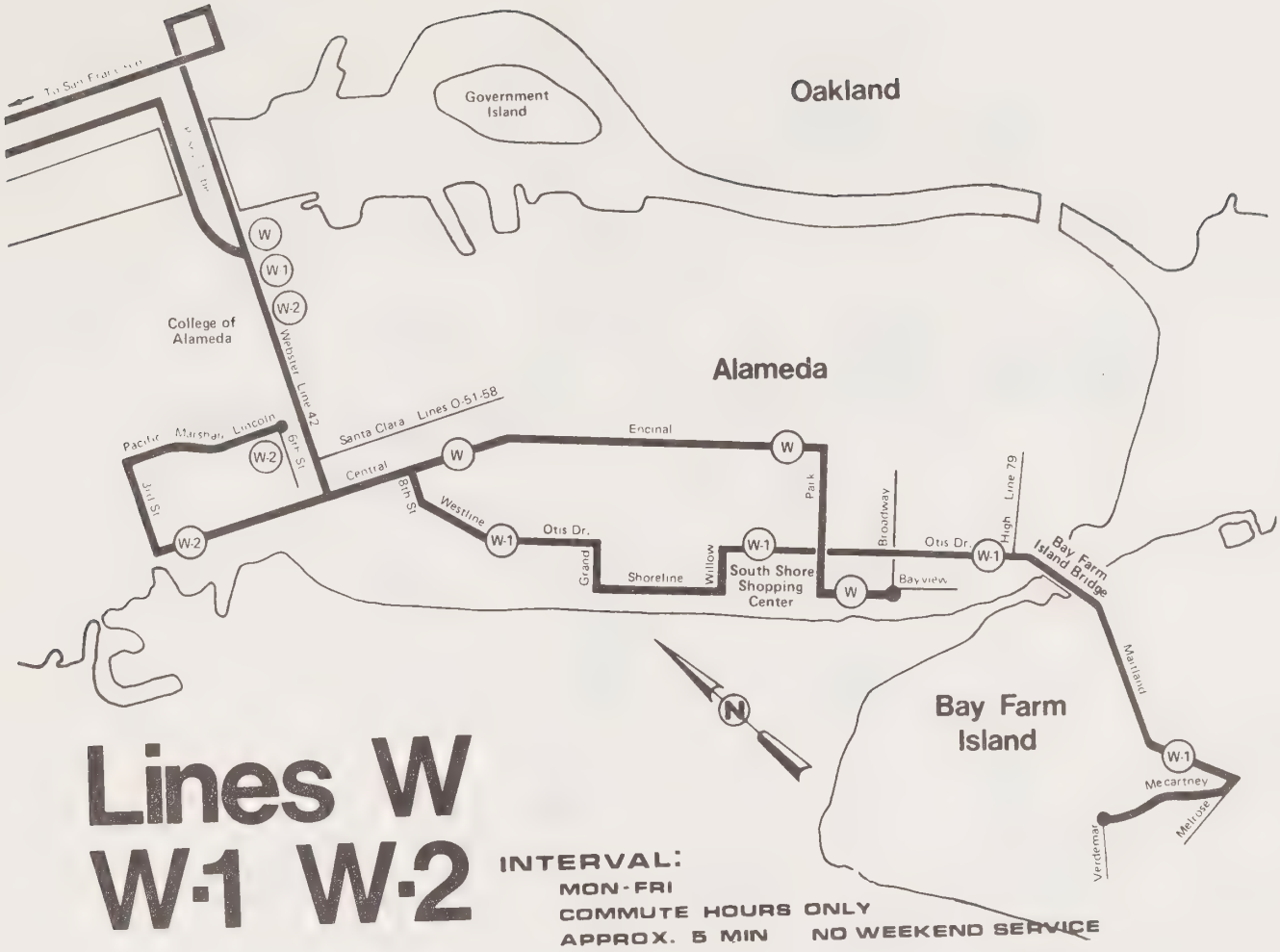
Table 25

EXISTING BUS ROUTES



5/1/77

fig. 41

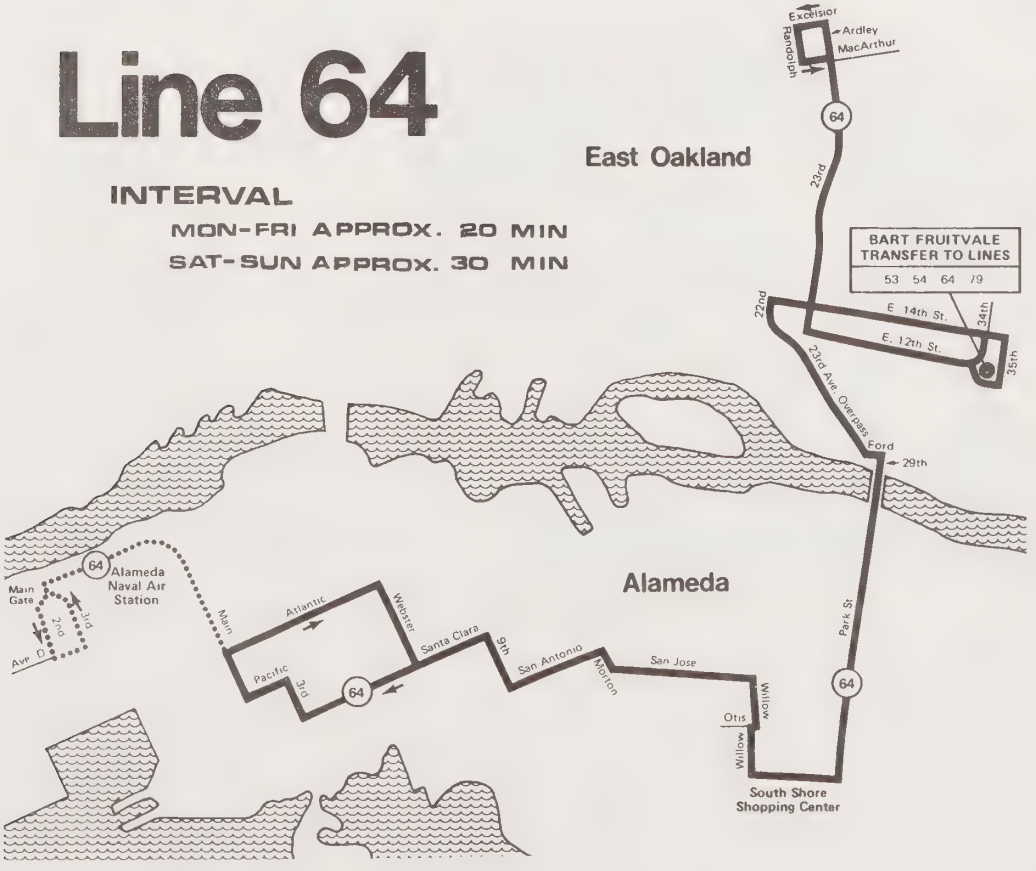


Lines W W-1 W-2

INTERVAL:
MON-FRI
COMMUTE HOURS ONLY
APPROX. 5 MIN NO WEEKEND SERVICE

Line 64

INTERVAL
MON-FRI APPROX. 20 MIN
SAT-SUN APPROX. 30 MIN



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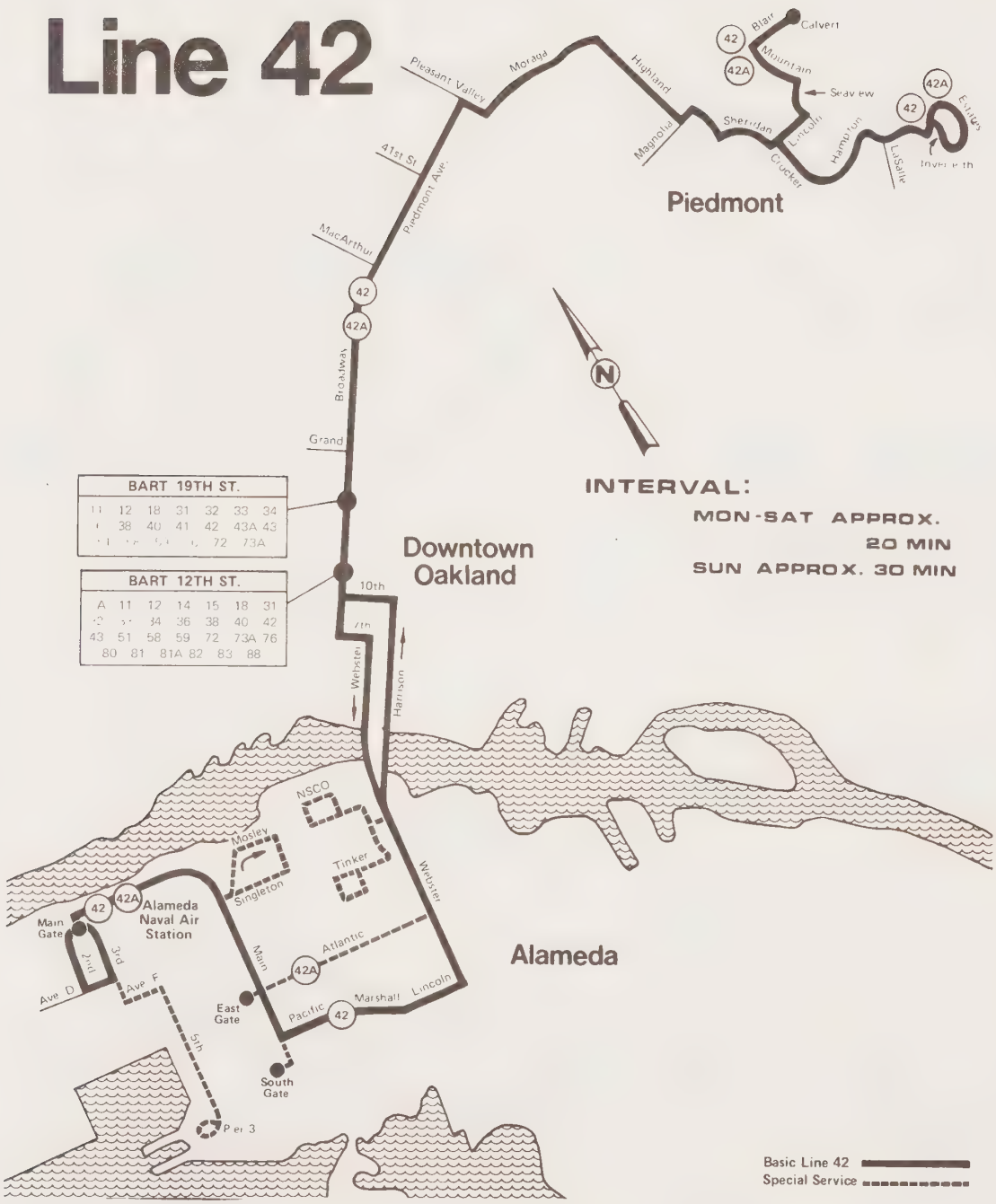
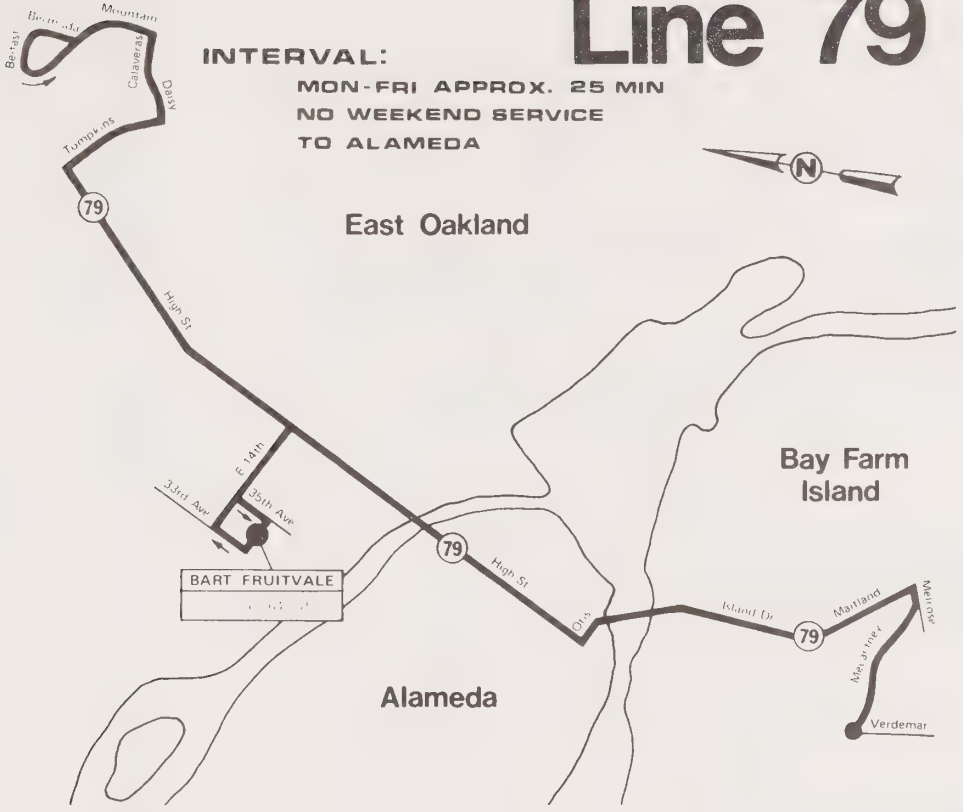
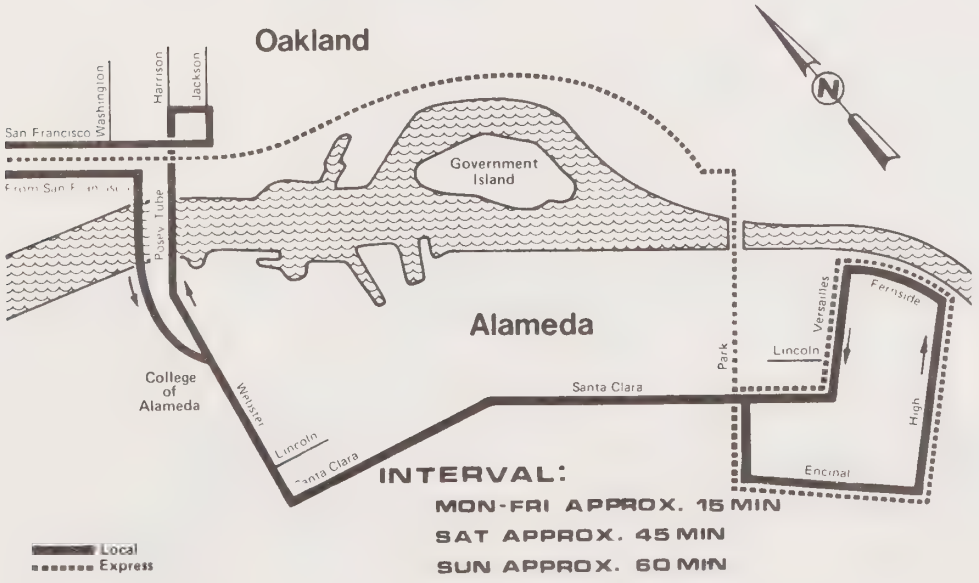
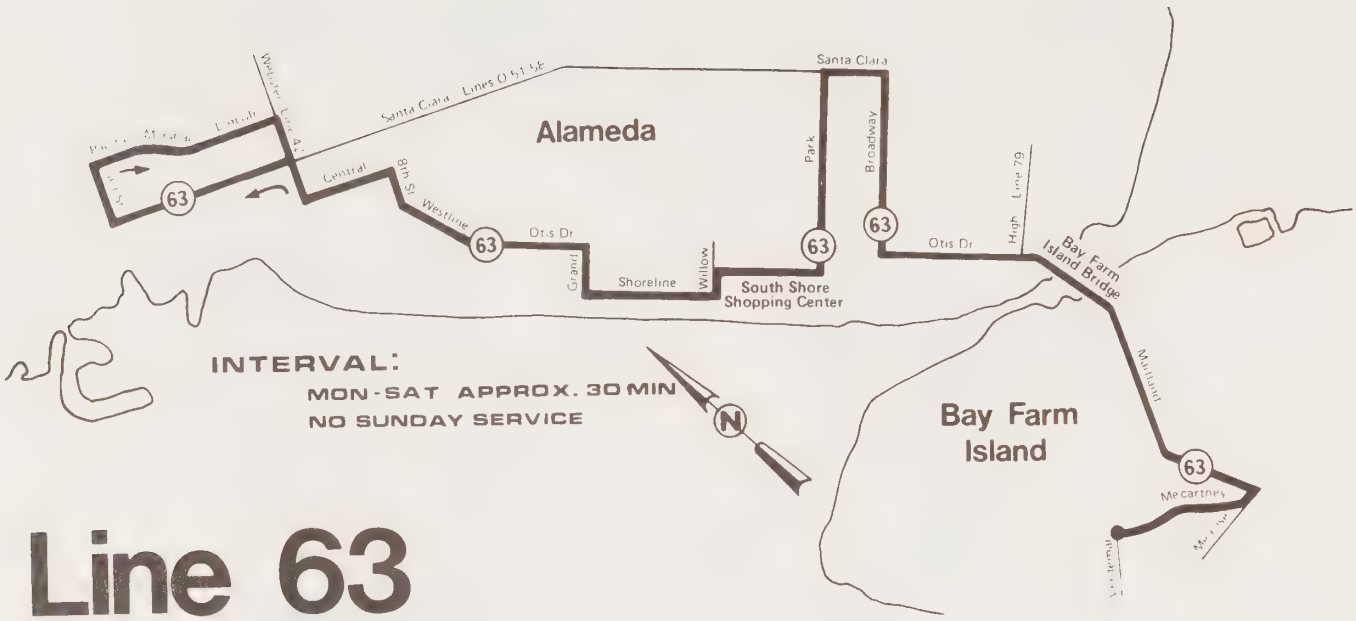

Pleasant Valley
Moraga
Highland
Blair
Calvert
Mountain
Seaview
Sherman
Lincoln
Hampton
LaSalle
Piedmont
41st St
Piedmont Ave.
MacArthur
Broadway
Grand
42
42A
BART 19TH ST.
11 12 18 31 32 33 34
38 40 41 42 43A 43
72 73A
BART 12TH ST.
A 11 12 14 15 18 31
34 36 38 40 42
43 51 58 59 72 73A 76
80 81 81A 82 83 88
Downtown Oakland
10th
7th
Webster
Harrison
INTERVAL:
MON-SAT APPROX. 20 MIN
SUN APPROX. 30 MIN
NSCO
Mosley
Singleton
Tinker
Webster
Alameda Naval Air Station
Main Gate
Atlantic
Main
Ave D
2nd
3rd
Ave F
East Gate
Pacific
Marshall
Lincoln
5th
South Gate
Pier 3
Alameda
Basic Line 42
Special Service

Line 79



Lines O & OX





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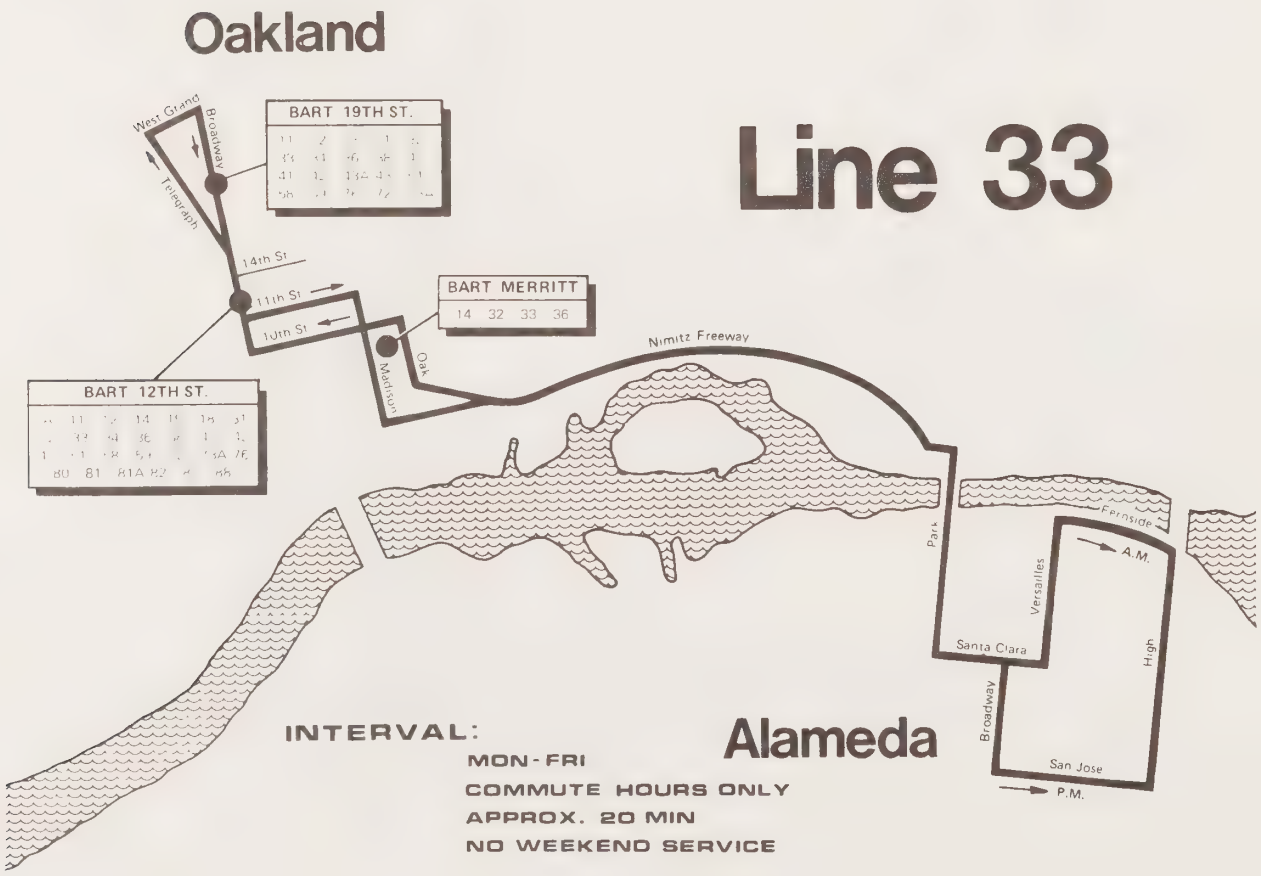

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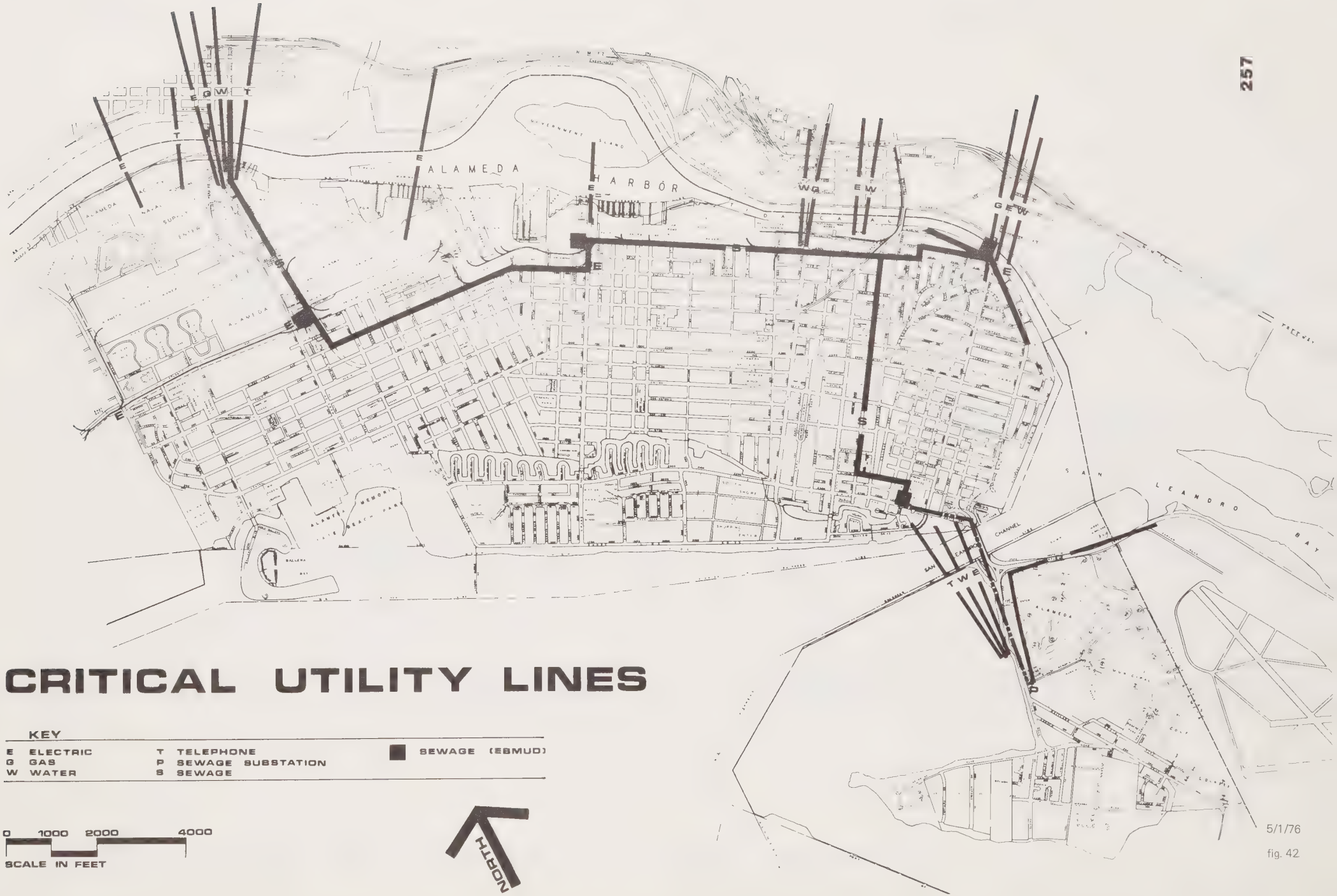


CRITICAL UTILITY LINES

KEY

E ELECTRIC	T TELEPHONE	SEWAGE (EBMUD)
G GAS	P SEWAGE SUBSTATION	
W WATER	S SEWAGE	

0 1000 2000 4000
SCALE IN FEET

NORTH

5/1/76

fig. 42

TRIPS GENERATED BY SINGLE LAND USES AT VARIOUS TIMES OF DAY

Square Feet

		80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320
SHOPPING																										
Outbound-AM	.10*	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
PM	1.35	108	122	135	149	162	175	189	203	216	230	243	257	270	284	297	311	324	338	351	365	378	392	405	419	432
Inbound -AM	.10	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
PM	1.35	108	122	135	149	162	175	189	203	216	230	243	257	270	284	297	311	324	338	351	365	378	392	405	419	432
		80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320
OFFICE																										
Outbound-AM	.40*	32	36	40	44	48	52	56	60	64	68	72	76	80	84	88	92	96	100	104	108	112	116	120	124	128
PM	1.80	144	162	180	198	216	234	252	270	288	306	324	342	360	378	396	414	432	450	468	486	504	522	540	568	576
Inbound -AM	1.80	144	162	180	198	216	234	252	270	288	306	324	342	360	378	396	414	432	450	468	486	504	522	540	568	576
PM	.40	32	36	40	44	48	52	56	60	64	68	72	76	80	84	88	92	96	100	104	108	112	116	120	124	128
		400	420	440	460	480	500	520	540	560	580	600	620	640	660	680	700	720	740	760	780	800				
RESIDENTIAL																										
Outbound-AM	.40**	160	168	176	184	192	200	208	216	224	232	240	248	256	264	272	280	288	296	304	312	320				
PM	.25	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	190	195	200				
Inbound -AM	.20	80	84	88	92	96	100	104	108	112	116	120	124	128	132	136	140	144	148	152	156	160				
PM	.60	240	252	264	276	288	300	312	324	336	348	360	372	384	396	408	420	432	444	456	468	480				
		60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540
LIGHT INDUSTRIAL																										
Outbound-AM	.05*	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
-PM	.50	30	40	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270
Inbound -AM	.40	24	32	40	48	56	64	72	80	88	96	104	112	120	128	136	144	152	160	168	176	184	192	200	208	216
-PM	.10	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54

Table 26

* Trips generated per 1000 square feet of building
** Trips generated per dwelling unit

Note:
Multiplying the number of trips generated per unit (either dwelling unit or 1000 sq. ft.) by the total number of units results in the number of trips that can be generated by a given level of development during a certain period of the working day. For instance: 480 dwelling units will generate 120 trips outbound in the p.m. period, or 192 trips outbound in the a.m. period; 120,000 sq. ft. of office building will generate 216 trips inbound in the a.m. period.

SOME LAND USE COMBINATIONS WITHIN OUTBOUND P.M. CAPACITY

	Trips				
Residential	170	400 d.u.			
Lt.Industrial		140,000 sq.ft.			
Office	504	160,000 sq.ft.			
Shop		160,000 sq.ft.			
Residential	175	420 d.u.			
Lt.Industrial		140,000 sq.ft.			
Office	499	180,000 sq.ft.			
Shop		130,000 sq.ft.			
Residential	180	400 d.u.	440 d.u.		
Lt.Industrial		160,000 sq.ft.	140,000 sq.ft.		
Office	495	110,000 sq.ft.	140,000 sq.ft.		
Shop		220,000 sq.ft.	170,000 sq.ft.		
Residential	185	460 d.u.	420 d.u.		
Lt Industrial		140,000 sq.ft.	160,000 sq.ft.		
Office	486	120,000 sq.ft.	150,000 sq.ft.		
Shop		200,000 sq.ft.	160,000 sq.ft.		
Residential	190	400 d.u.			
Lt.Industrial		180,000 sq.ft.			
Office	482	110,000 sq.ft.			
Shop		210,000 sq.ft.			
Residential	225	580 d.u.	500 d.u.	460 d.u.	420 d.u.
Lt.Industrial		160,000 sq.ft.	200,000 sq.ft.	220,000 sq.ft	240,000 sq.ft.
Office	450	100,000 sq.ft.	130,000 sq.ft.	160,000 sq.ft	190,000 sq.ft.
Shop		200,000 sq.ft.	160,000 sq.ft.	120,000 sq.ft.	80,000 sq.ft.
Residential	240	600 d.u.	560 d.u.	520 d.u.	480 d.u.
Lt.Industrial		180,000 sq.ft.	200,000 sq.ft.	220,000 sq.ft.	240,000 sq.ft.
Office	432	90,000 sq.ft.	120,000 sq.ft.	150,000 sq.ft.	180,000 sq.ft.
Shop		200,000 sq.ft.	160,000 sq.ft.	120,000 sq.ft.	80,000 sq.ft.
Residential	255	580 d.u.	540 d.u.	500 d.u.	
Lt.Industrial		220,000 sq.ft.	240,000 sq.ft.	260,000 sq.ft.	
Office	419	90,000 sq.ft.	120,000 sq.ft.	150,000 sq.ft.	
Shop		190,000 sq.ft.	150,000 sq.ft.	110,000 sq.ft.	
Residential	270	600 d.u.	560 d.u.	520 d.u.	
Lt.Industrial		240,000 sq.ft.	260,000 sq.ft.	280,000 sq.ft	
Office	405	90,000 sq.ft.	120,000 sq.ft.	150,000 sq.ft.	
Shop		180,000 sq.ft.	140,000 sq.ft.	100,000 sq.ft.	
Residential	285	580 d.u.			
Lt.Industrial		280,000 sq.ft.			
Office	391	120,000 sq.ft.			
Shop		130,000 sq.ft.			
Residential	300	600 d.u.	560 d.u.		
Lt.Industrial		300,000 sq.ft.	320,000 sq.ft.		
Office	374	80,000 sq.ft.	140,000 sq.ft.		
Shop		170,000 sq.ft.	90,000 sq.ft.		
Residential	315	580 d.u.	540 d.u.		
Lt.Industrial		340,000 sq.ft.	360,000 sq.ft.		
Office	360	80,000 sq.ft.	110,000 sq.ft.		
Shop		160,000 sq.ft.	120,000 sq.ft.		
Residential	330	600 d.u.	560 d.u.		
Lt.Industrial		360,000 sq.ft.	380,000 sq.ft.		
Office	342	100,000 sq.ft.	130,000 sq.ft.		
Shop		120,000 sq.ft.	80,000 sq.ft.		
Residential	350	600 d.u.	560 d.u.		
Lt.Industrial		400,000 sq.ft.	420,000 sq.ft.		
Office	324	90,000 sq.ft.	120,000 sq.ft.		
Shop		120,000 sq.ft.	80,000 sq.ft.		
Residential	360	600 d.u.			
Lt.Industrial		420,000 sq.ft.			
Office	315	100,000 sq.ft.			
Shop		100,000 sq.ft.			

Table 30

OUTBOUND P.M. CAPACITY MATRIX FOR RESIDENTIAL AND INDUSTRIAL

(LIGHT INDUSTRIAL)

RESIDENTIAL	Trips Per K Sq.Ft.	(70) 140	(80) 160	(90) 180	(100) 200	(110) 220	(120) 240	(130) 260	(140) 280	(150) 300	(160) 320	(170) 340	(180) 360	(190) 380	(200) 400	(210) 420
Trips per d.u.																
(100)	400	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310
(105)	420	175	185	195	205	215	225	235	245	255	265	275	285	295	305	315
(110)	440	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320
(115)	460	185	195	205	215	225	235	245	255	265	275	285	295	305	315	325
(120)	480	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330
(125)	500	195	205	215	225	235	245	255	265	275	285	295	305	315	325	335
(130)	520	200	210	220	230	240	250	260	270	280	290	300	310	320	330	340
(135)	540	205	215	225	235	245	255	265	275	285	295	305	315	325	335	345
(140)	560	210	220	230	240	250	260	270	280	290	300	310	320	330	340	350
(145)	580	215	225	235	245	255	265	275	285	295	305	315	325	335	345	355
(150)	600	220	230	240	250	260	270	280	290	300	310	320	330	340	350	360

Table 28

PARTIAL MATRIX OF TRIP GENERATIONS OF FOUR LAND USE COMBINATIONS

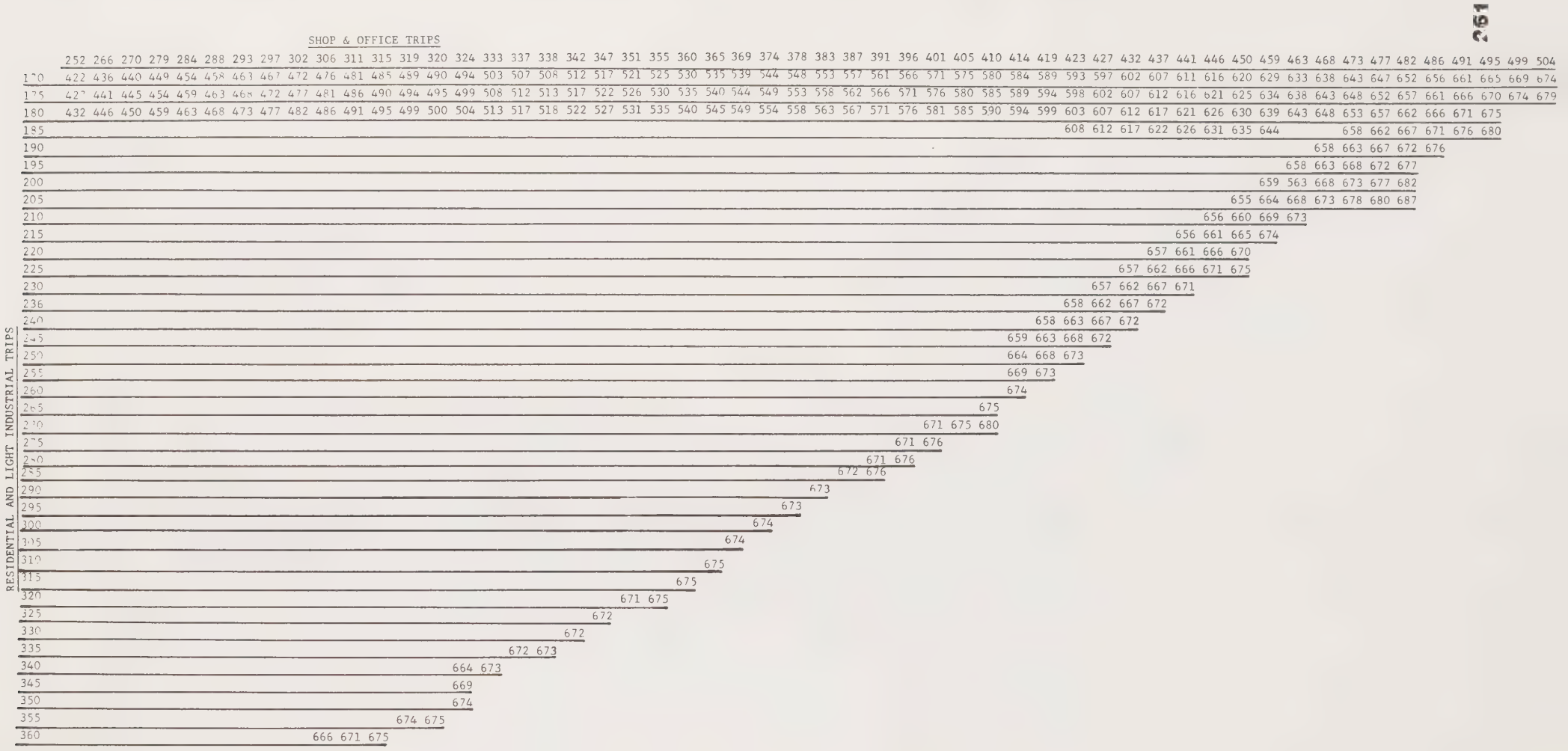


Table 29

Combining all the trip levels generated by the combinations of uses in Table 27 (Office and Shopping) with the range of trip levels shown in Table 28 (Residential and Light Industrial), results in a combination of the four uses that could occur together and still not exceed traffic capacity. This is shown in the partial matrix in Table 29. The 410 trips that are generated by 100,000 sq. ft. of office building and 170,000 sq. ft. of shopping are combined with the 265 trips generated by 280,000 sq. ft. of light industrial and 500 dwelling units.

Following Table 30 is a listing of various combinations of the four uses that fall within the outbound P.M. capacity of 675 trips as in Table 29. They were all determined by use of Table 9. Of course, levels of development could occur between the increments used here; 575 dwelling units instead of 580. The increments used here are only some of the examples and combinations possible.

OUTBOUND P.M. CAPACITY MATRIX FOR OFFICE AND SHOPPING

(O F F I C E)

SHOPPING: Trips Per K Sq.Ft.		(144) 80	(162) 90	(180) 100	(198) 110	(216) 120	(234) 130	(252) 140	(270) 150	(288) 160	(306) 170	(324) 180	(342) 190	(360) 200	(378) 210	(396) 220
(108)	80	252	270	288	306	324	342	360	378	396	414	432	450	468	486	504
(122)	90	266	284	302	320	338	356	374	392	410	428	446	464	482	500	518
(135)	100	279	297	315	333	351	359	387	405	423	441	459	477	495	513	531
(149)	110	293	311	329	347	365	383	401	419	437	455	473	491	509	527	545
(162)	120	306	324	342	360	378	396	414	432	450	468	486	504	522	540	558
(175)	130	319	337	355	373	391	409	427	445	463	481	499	517	535	553	571
(189)	140	333	351	369	387	405	423	441	459	477	495	513	531	549	567	585
(203)	150	347	365	383	401	419	437	455	473	491	509	527	545	563	581	599
(216)	160	360	378	396	414	432	450	468	486	504	522	540	558	576	604	612
(230)	170	374	392	410	428	446	464	482	500	518	536	554	572	590	608	626
(243)	180	387	405	423	441	459	477	495	513	531	549	567	585	603	621	639
(257)	190	401	419	437	455	473	491	509	527	545	563	581	599	617	635	653
(270)	200	414	432	450	468	486	504	522	540	558	576	594	612	630	648	666
(284)	210	428	446	464	482	500	518	536	554	572	590	608	626	644	662	
(297)	220	441	459	477	495	513	531	549	567	585	603	621	639	657	675	

Table 27

Various levels of office and shopping* development are paired together to determine what maximum levels of these two uses could be combined that would not exceed the 675 trips that represent the outbound P.M. capacity. For instance, 210,000 sq.ft. of office buildings will generate 378 trips and 220,000 sq.ft. of shopping buildings will generate 297 trips outbound in the P.M. period. Together they will generate traffic that will use up the reserve tube capacity of 675 trips in the outbound P.M. period. However, a lower level of both uses, such as 100,000 sq.ft. of office building and 100,000 sq.ft. of shopping, would be used to allow combination with other uses.

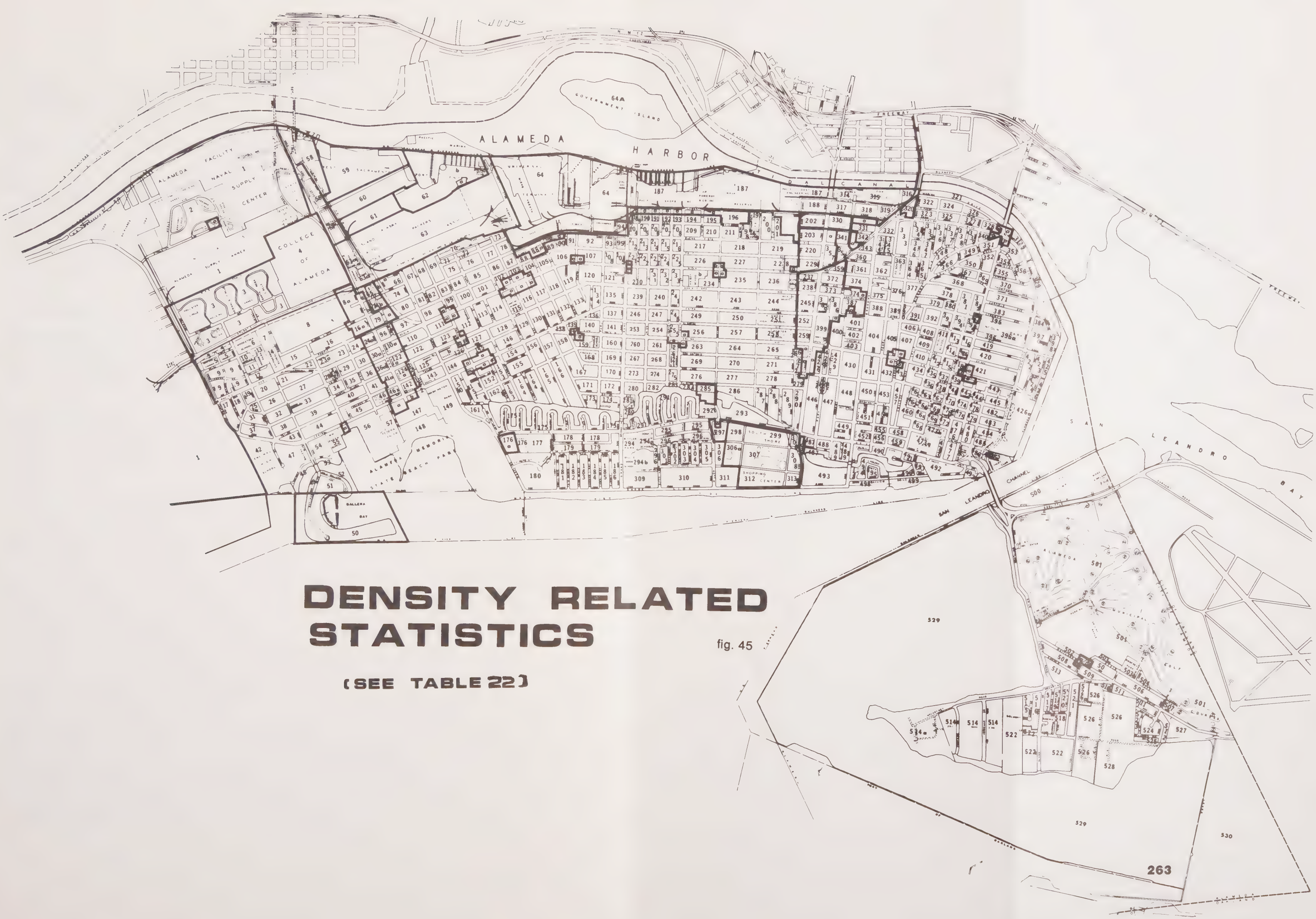
The same principle holds true for combinations of residential and light industrial use. 340,000 sq.ft. of light industrial use would generate 170 trips in the outbound P.M. period and 540 dwelling units would generate 135 trips during the same time for a total of 305 trips.

*Table could also be arranged showing office and industrial, office and residential, etc., but it is inconsequential at this point since the end result is to determine what combinations of all four uses reach traffic capacity.

DENSITY RELATED STATISTICS

(SEE TABLE 22)

fig. 45



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LAND USE INDEX

Land Use Category **Detailed Description** **see page(s):**

GENERAL PLAN AMENDMENT GPA-80-5

Approved by the City Council August 5, 1980

Bay Farm Island, Land Use Recommendations, Outside Harbor Bay Isle, Page 193, d) and f) should be corrected to read:

d. The land used for agriculture south of Oleander Avenue and east of the Garden Isle Townhouses, including the 5.94 acre Victorian Village property, and the 2.85 acre Olivera Farm, should be designated Single Family with a delayed develpment overlay pending compliance with the Noise Element and Airport Safety Element standard and policies; the portion of the agricultural land including the 17.82 acre Silva Farms property should be designated Special Single Family with a delayed development overlay pending compliance with the Noise Element standards and policies and the Airport Safety Element constraint limiting density.

f. The vacant 0.94-acre site at the end of Magnolia Drive should be designated Special Single Family. Any developments must conform to the applicable standards of the City's Noise Element standards and the Airport Safety Element density constraint.

The Land Use Plan Map (back pocket) has also been changed to reflect this amendment which has changed the Silva Farms site, a 17.82 acre site which lies south of the Oleander/Melrose intersection, along Oleander Avenue and including the end of Magnolia Avenue, from Single Family to Special Single Family.

6/9/80 Approved by the Planning Board

LAND USE PLAN JULY 3, 1979

- SINGLE FAMILY
- SPECIAL SINGLE FAMILY
- SPECIAL MULTI-FAMILY
- DELAYED DEVELOPMENT
- ADMINISTRATIVE/PROFESSIONAL
- NEIGHBORHOOD COMMERCIAL
- GENERAL COMMERCIAL
- LIGHT INDUSTRIAL
- HEAVY INDUSTRIAL
- MIXED USE
- OPEN SPACE
- SCHOOLS
- MILITARY INSTALLATIONS
- ROADS (ADDITIONS, ALTERATIONS, OR EXTENSIONS)

0 1000 4000
SCALE IN FEET

CITY OF ALAMEDA